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In THE MUNICIPAL INDEX (an 850-page annual volume) readers will find much material, including articles, lists and bibliographies on a wide variety of municipal and civic subjects, not published in the monthly issues of THE AMERICAN CITY


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# 46 miles of DeLAVAUD PIPE are in use for gas and water mains

The progressive spirit of Springfield, Massachusetts is exemplified by a beautiful civic center with a magnificent campanile tower. Springfield's progressiveness is also evidenced by its gas and water systems for which 46 miles of deLavaud pipe have been specified and laid.

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DeLavaud pipe is produced by pouring molten iron into a rapidly revolving cylindrical mold. Centrifugal force holds the metal against the sides of the mold and drives out impurities with a force many times greater than gravity. DeLavaud pipe is a modern pipe for modern conditions and present-day high-pressures. Ask us for facts and figures. The new deLavaud Handbook gives detailed information. Write for a free copy today.

The self-centering shoulder in the deLavaud bell eliminates the requirement of a bead. In laying deLavaud pipe it is only necessary to place the spigot of one pipe within the bell of the next, sliding the pipe forward until it rides upon the taper and automatically centers itself.

## United States Pipe and Foundry Co., Burlington, N.J.

*Our pipe bears the "Q-Check" trademark of The Cast Iron Pipe Research Association*

*Sales Offices:* New York, Philadelphia, Pittsburgh, Cleveland, Buffalo, Chicago, Dallas, Birmingham, Kansas City, Minneapolis, Seattle, San Francisco, Los Angeles

When you write for that catalog, kindly mention THE AMERICAN CITY

# UNEMPLOYMENT, HOUSING and Other Items for Mayors and City Managers

## *The Gravity of the Unemployment Problem*

RECENT and authoritative figures are at last available as to unemployment conditions among a group of workers large enough to be typical of the industrial population of important cities throughout the United States. On January 24 the President's Emergency Committee for Employment transmitted to the Senate the results of a census of 213,787 families in 46 large cities, conducted on December 8 and 9 by agents of the Metropolitan Life Insurance Company among industrial policyholders of that corporation.

In the families canvassed there were 355,759 wage or salary earners, or an average of 1.7 workers per family. Of these workers a total of 271,132 were at work on December 8 and 9, and of this number, 195,309, or 54.9 per cent of all workers, were working full time, and 75,823, or 21.3 per cent, were working part time. The total persons without work in these families numbered 84,627, or 23.8 per cent.

The percentage of workers wholly unemployed varied greatly among the cities canvassed. The most serious conditions were reported from Fall River, with 31.0 per cent, Detroit, with 30.2 per cent, and Indianapolis, with 29.5 per cent wholly unemployed among the Metropolitan's industrial policyholders.

There is reason to believe, of course, that the percentage of unemployment in the country as a whole is less than among the industrial workers covered by this special census. But the showing is serious enough, even with the most conservative interpretation. Indeed, Colonel Arthur Woods, Chairman of the President's Emergency Committee on Employment, in transmitting the Metropolitan's figures to the Senate, submitted with them an estimate by Government statisticians in which it was stated that "it seems probable that the total number of wholly unemployed persons in the United States in the first week of December, 1930, was between 4,500,000 and 5,000,000, or about 10 per cent of the total number of persons with gainful occupations."

## *Housing—A Challenge to Municipal Statesmanship*

EVER since the business recession of the fall of 1929, as our readers well know, THE AMERICAN CITY has repeatedly urged the pushing of public works as a much more statesman-like procedure than curtailment in these troublous times. The substantial unanimity with which municipal and county improvements have continued to go forward has not only prevented much worse conditions of unemployment than now exist, but has produced assets of permanent value to the contributing taxpayers.

During this same period of widespread distress, there has existed an opportunity for public service by financial and industrial interests which has been almost wholly neglected. This opportunity is in the provision of adequate, sanitary housing for the lower-income groups. THE AMERICAN CITY has never been an advocate of house-building as a normal state or municipal enterprise. We are convinced, however, that unless private initiative and capital will rise to the present emergency, the time has come for public action.

As a definite suggestion, we urge that in every industrial city the mayor or other outstanding local leader invite a representative group of business, financial and professional men to confer with him at an early date on the local housing problem; that this meeting be preceded by the assembling of definite facts, figures and photographs of slum districts and sub-normal housing conditions; and that emphasis be given to the challenging opportunities which now exist to furnish needed employment in the building trades and to solve the housing problem for that all too large industrial army whose homes are not fit habitations for human beings.

The story of Claude M. Leigh's activities in London, on page 150 of this issue, indicates the money-making possibilities of large-scale rehabilitation of houses and tenements which need repair or remodeling. In many American cities capital could be profitably employed in a similar manner. But the great need almost everywhere is for the building of new low-cost dwellings of good design, preferably in well-planned neighborhood units, with ample open spaces, thus hastening the day when every child shall be born into a real home in which it will be possible to grow up sound in body, mind and spirit.

That our cities may attain their twentieth century possibilities, we must get rid as speedily as possible of the blighted areas to be found in most of them. A possible solution is the creation in each city of a non-partisan Housing Authority, to which would be given powers of eminent domain and the right to obtain state credit or to issue bonds on a basis analogous to that which is proving so successful in the building of toll-bridges and tunnels by the Port of New York Authority. In most states enabling legislation or constitutional amendments may be necessary. But is there any better time than the present to start such a movement?

If there is any alternative other than public action to an indefinite continuance of slums, let big business and private finance show the way. Plenty of land, money and labor are now available for a rational solution of the problem. The task is one which few public officials are anxious to undertake, but which, perhaps, they can no longer shirk if they are to meet the present challenge to municipal statesmanship.

## *Wyoming Municipalities Organize*

THE thirty-sixth state in which the municipalities have associated themselves for greater efficiency in local government is Wyoming. At a meeting in the city of Cheyenne, on January 2 and 3, the League of Wyoming Municipalities was formed and elected these officers:

E. W. Rowell, of Casper, President.
Cal Holliday, of Cheyenne, Vice-President.
G. R. McConnell, of Laramie, Executive Secretary and Treasurer.
Trustees: George L. Smith, of Sheridan, one-year term; W. Gwynn, of Lovell, two-year term; Wm. Rogers, of Green River, three-year term.

The League's objects are:

First, to perpetuate and develop the League as an agency for the cooperation of cities of the state of Wyoming in the practical study of city affairs; second, to promote application of the best methods in the administration of municipal government and the making of municipal improvements, by holding conventions and conferences and collecting and disseminating information on municipal problems; third, to gather and circulate information and experience on the most approved methods of city administration; fourth, to secure the enactment of legislation beneficial to municipalities, and prevent the enactment of legislation inimical to their interests.

## *Recent City Manager Appointments*

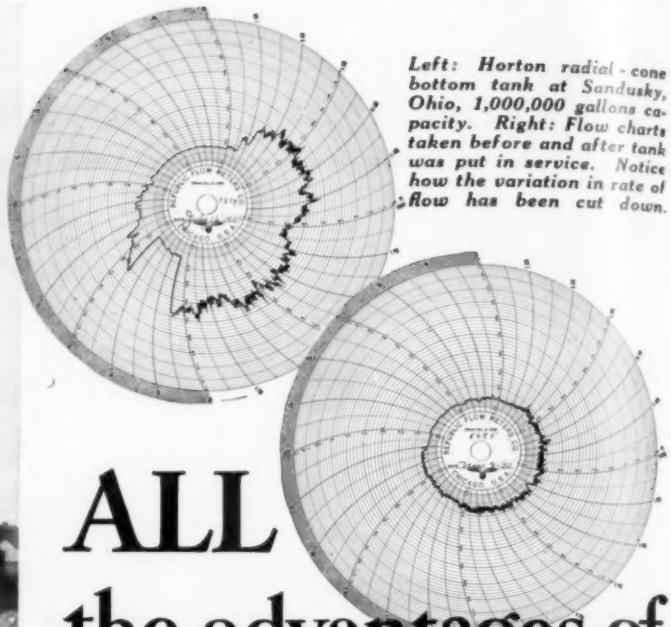
J. WALTER ACKERMAN, City Manager of Watertown, N. Y., from January, 1922, to May, 1930, was appointed City Manager of Fall River, Mass., on January 5. He succeeds Edward F. Harrington, who had been City Manager since January, 1929.

Herbert Brown, Manager of the Salina water plant, has been appointed City Manager of Salina, Kans., succeeding Harold A. Ragle, who had been City Manager since 1926.

Major Alfred B. Cutter, of Hackensack, N. J., one-time City Manager of Fort Myers, Fla., was appointed City Manager of Cape May, N. J., on January 13. He succeeds Paul A. Volcker, who recently resigned to become City Manager of Teaneck, N. J.

E. F. Mitchell was appointed City Manager of Fort Meade, Fla., January 1, succeeding W. J. Muldrow, resigned.

CLARENCE E. RIDLEY,
Executive Secretary, The International City Managers' Association.



*Left: Horton radial-cone bottom tank at Sandusky, Ohio, 1,000,000 gallons capacity. Right: Flow charts taken before and after tank was put in service. Notice how the variation in rate of flow has been cut down.*

# ALL the advantages of shallow depth in any size elevated steel water tank

THE progressiveness of a city administration is symbolized by its use of Horton shallow-depth elevated steel water tanks, for more than one reason.

First: because large elevated storage is usually the most economical method of improving a water system. The experiences of many cities have shown that large elevated storage may cut annual costs considerably, and that the first cost is not high in comparison with other plans.

Second: because Horton shallow-depth tank designs are the most modern and economical. With these designs, the depth of the tank is small in proportion to the diameter. This means that there is less difference in water level during filling and emptying, and therefore less variation in pressure. Pumping costs are reduced, since pumps work most efficiently at a practically constant pressure. And without going to excessive height, all of the water can be stored at a level that gives good pressure.

The accompanying table shows the range of capacities available with Horton tanks, in depths never exceeding 40 feet—from 20,000 gallons to 600,000 gallons with ellipsoidal bottom; from 1,000,000 gallons up with the radial-cone bottom.

Our nearest office will be glad to furnish municipal officials and waterworks engineers with information and estimates on Horton tanks.

**Table of Sizes**
**HORTON STEEL TANKS**

| Gallons Capacity | Depth | Diameter |
|---|---|---|
| 20,000 | 15′10″ | 15′6″ |
| 30,000 | 17′9″ | 18′0″ |
| 40,000 | 18′9″ | 20′0″ |
| 50,000 | 19′6″ | 22′0″ |
| 60,000 | 20′0″ | 24′0″ |
| 75,000 | 21′6″ | 26′0″ |
| 100,000 | 23′2″ | 28′8″ |
| 125,000 | 28′4″ | 28′8″ |
| 150,000 | 25′0″ | 34′0″ |
| 200,000 | 27′0″ | 38′0″ |
| 250,000 | 30′0″ | 40′0″ |
| 300,000 | 34′0″ | 41′0″ |
| 400,000 | 34′11″ | 47′0″ |
| 500,000 | 37′0″ | 51′0″ |
| 600,000 | 39′9″ | 54′0″ |
| 1,000,000 | 25′ | 86′0″ |
| 1,500,000 | 36′6″ | 86′0″ |
| | 25′ | 104′0″ |
| 2,000,000 | 31′0″ | 108′0″ |
| | 27′6″ | 116′0″ |

## CHICAGO BRIDGE & IRON WORKS

Chicago.....2127 Old Colony Bldg.
New York....3108 Hudson Ter. Bldg.
Cleveland...2236 Midland Bank Bldg.
Detroit.....1501 Lafayette Bldg.
Philadelphia.....1616 Jefferson Bldg.
Boston...1501 Consolidated Gas Bldg.
Birmingham.....1502 Fiftieth St., N.
Dallas.....3306 Magnolia Bldg
San Francisco.....1033 Rialto Bldg.
Seattle.....4343 Smith Tower
Houston.....1101 Electric Bldg.
Tulsa.....2425 Exchange Bank Bldg.

# HORTON TANKS

AC-2 Gray

# Pure Water—Man's Greatest Need

**Items on Water Supply and Purification**

## *Dipping Needles Locate Valves in Tampa*

TAMPA, Fla., experiences some difficulty during grading and paving operations, with the various buried waterworks valves and accessories. Ordinarily a Darley dipping needle, a tungsten jeweled needle, one end of which is magnetized, is used to locate these valves. This is a very sensitive apparatus and is attracted especially by the bronze valve stem in valves 4 inches and larger. It has been found necessary to hold the apparatus due north and south in order to get the best results.

While such a device is very simple, its use requires an experienced operator who has a knowledge of the arrangement of the distribution system, and it has sometimes been necessary to locate deeply covered valves by excavating. It is felt that such a device is a very valuable piece of equipment for a water-works plant.

W. E. MICK,
Superintendent, Water Department.

## *Water Department at Milton Strictly Self-Supporting*

MILTON, MASS., is a town of 15,500 population, contiguous to Boston, the population having increased about 60 per cent since the war. It is residential, with three comparatively small business zones with rigid restrictions under a zoning act. There are no industries from which the Water Department receives a large revenue. In its 73 miles of main pipe it has 52 live services per mile of main.

The original water-supply system was laid out by a private company. When the town took over the plant and joined the Boston Metropolitan System, the supply connected with the town mains at another point, which had the effect of entering the middle of the distribution system. The modern requirements for water available for fire fighting have proved that most of the original installation of mains was too small, and tests have since proved them inadequate. These factors have all contributed to a rather heavy outlay of money for extensions.

Since 1924, the Water Commissioners have operated the Department on a strictly self-supporting basis. No assistance in the form of appropriations is received from the town or through general taxes. This means, of course, that extensions are financed by issues of bonds. Reinforcements of, and improvements to, the system show no return other than that of safety.

Extensions of mains in new developments are made after the signing of an agreement which requires the applicant to pay 8 per cent for a period of eight years on the actual cost of the main extensions. In case the installation is an 8-inch pipe or larger, the guarantee is based on the cost of 6-inch pipe.

In order to insure payment of this guarantee, the developer must deposit in a local savings bank a sum equal to at least half of the estimated cost of the installation. The deposit is made to the order of the Water Department and can be drawn against only by order of the Department. If at any time before the expiration of the eight-year period the actual income received equals or exceeds the amount of the annual guarantee, the balance remaining in the deposit, together with the regular savings-bank interest, is returned to the applicant.

This method is strictly enforced in all cases, even though the Department is assured by the developer that the number of houses to be built will be enough to carry the cost. It very frequently happens that even though enough houses have been built on the line of an extension, there are not enough actually occupied to bring in sufficient income. There is at present a movement for legislation in Massachusetts which will permit cities and towns to assess, as betterments against the property thereby profited, a fair portion of the cost of main extensions required. It is felt that such a method may be preferable in many ways to the method now in use, but, in the absence of such legislation, the present policy furnishes the proper protection and income to the town.

DAVID A. HEFFERNAN,
Superintendent of Water Department.

## *An Old Water Service Connection*

IN opening a new boulevard entrance to Decatur from the south, workmen recently unearthed an old water service connection made and installed by the late Hieronymus Mueller, founder of the Mueller Co., Decatur, Ill. Back in the early sixties when the water works were established Mr. Mueller was named as official tapper.

A 64-YEAR-OLD WATER SERVICE CONNECTION RECENTLY UNEARTHED IN DECATUR, ILL.

As shown by the picture, the corporation cock is the old drive pattern. This required the drilling of the main by hand, which operation was suspended just before the drill broke through the inner side of the main. The corporation cock was then driven home by one heavy blow with a sledge. This was not always accomplished successfully. Frequently, through some slip, the operators received an involuntary shower-bath, and they nearly always worked in mud and water. It is interesting that the old gooseneck and corporation cock came out of the ground in serviceable condition after 64 years of constant use.

C. N. WAGENSELLER.

## *A Deep-Well Pump Supplies 5,500,000 Gallons of Water to Reno, Nev., Daily*

ONE of the largest deep-well pumps for city water supply in this country, having an output of 5,500,000 gallons a day, was recently placed in service in Reno, Nev. The new pump supplies domestic water to Reno and Sparks, Nev., and was needed as a source of supply in times of water shortage in the nearby mountain streams of the eastern Sierra slope, which form the normal source of supply.

The well, located near the main highway between Reno and Sparks, was drilled by the Western Drilling Co., of Carson City, for the Sierra Pacific Power Co. A deep-well turbine pump is driven by a General Electric 4,000-volt, 400-h.p. vertical hollow-shaft motor turning at 1,180 r.p.m.

The top bearing is water-cooled and is protected against overheating by a temperature relay which shuts down the pump if the bearing becomes overheated. As the cooling water is taken directly from the pump discharge, failure of pumping water will also shut down the pump.

To meet the demands of this pumping-plant, a new outdoor substation was installed which transforms power from 22,000 to 4,000 volts, through a bank of three 66-kva. transformers. This substation also supplies the industrial power load in the same vicinity. It is provided with an outdoor reclosing circuit-breaker equipment on the 4,000-volt side to eliminate unnecessary shutdowns. This substation has all supply and load lines underground.

P. C. CALDWELL.

# New PROGRESS IN PUBLIC UTILITY CONSTRUCTION

Hydrauger in use—boring under a double street and railroad—a distance of more than 100 feet. This remarkable new tool bores under thoroughfares, sidewalks, buildings, gardens—to lay pipe, condulets, drains and sewers—avoiding pavement-cutting almost entirely.

# HYDRAUGER

A REVOLUTIONARY ADVANCE in public utility construction methods has come with **Hydrauger,** the new hydraulic auger which makes it possible to drill horizontally under a street or highway and accurately **control the direction of the bore.**

Satisfactory bores have been made with Hydrauger up to 120 feet. At distances of 40 feet, the auger (in 90% of cases) will come out within 2 or 3 inches of the spot at which aimed. Accuracy is combined with speed. Hydrauger has drilled under a 45-foot street in 18 minutes and under a 90-foot street in 40 minutes, including the time required to add boring-bar extensions.

Costs of boring with Hydrauger are normally **less than one-tenth** of the total costs of cutting pavement, trenching, backfilling and replacing pavement.

Nothing like Hydrauger is now on the market. It is **not** a clumsy jacking device such as operators have been forced to resort to in the past. It is an earth-boring tool—ingenious, practical, perfected.

***We will gladly send you full details on this remarkable new device which is rendering obsolete former public utility construction methods.***

## HYDRAUGER CORPORATION, LTD.

1298 Bryant Street, San Francisco, California

Be Sure to Include HYDRAUGER In Your Budget for 1931

Use of HYDRAUGER Means Much in Earning and Keeping Public Goodwill

# Who's Who in Water Supply

***The 38th of a Series of Portraits of Water Works Officials Which Has Appeared Monthly Since January, 1928***

JOHN N. MacGIBBON
Supt., Water Dept.
Sauk Center, Minn.
(Appointed 1922)

C. L. EHRHART
Supt., Water Works
St. Cloud, Minn.
(Appointed 1930)

G. J. CHRISTIAN
Supt., Water Works
Northfield, Minn.
(Appointed 1928)

F. E. SCHACHT
Supt., Public Works
West Chicago, Ill.
(Appointed 1913)

STANLEY C. WILSON
Owner, Wilson Springs Water Co.
Chelsea, Vt.

CORNELIUS J. SULLIVAN
Supt., Water Works
Chisholm, Minn.
(Appointed 1907)

FLOYD SCHOOLEY
Supt., Water Dept.
Highland, Ill.
(Appointed 1922)

F. K. VANCE
Supt., Water Dept.
Neodesha, Kans.
(Appointed 1925)

A. C. HARWOOD
Supt., Water Works
Watseka, Ill.
(Appointed 1919)

F. A. FIESLER
Resident Mgr., Consumers Water Co., Girardsville, Pa.
(Appointed 1929)

G. C. PECK
Supt., Water Dept.
Council Grove, Kans.
(Appointed 1925)

R. S. TAIT
Supt., Water Works
Santa Cruz, Calif.
(Appointed 1909)

CARL M. BELKNAP
Div. Mgr., Kans. Power & Light Co., Marysville, Kans.
(Appointed 1906)

J. W. HOEY
Supt., Water Works
Salineville, Ohio
(Appointed 1926)

# A diver's Job? *by no means!*

## *Because a Jennings is located entirely outside the pit*

JENNINGS Suction Sewage Pumps are so designed that only the suction pipe is submerged in the sewage. Every working part is above the floor level; readily accessible for cleaning or inspection.

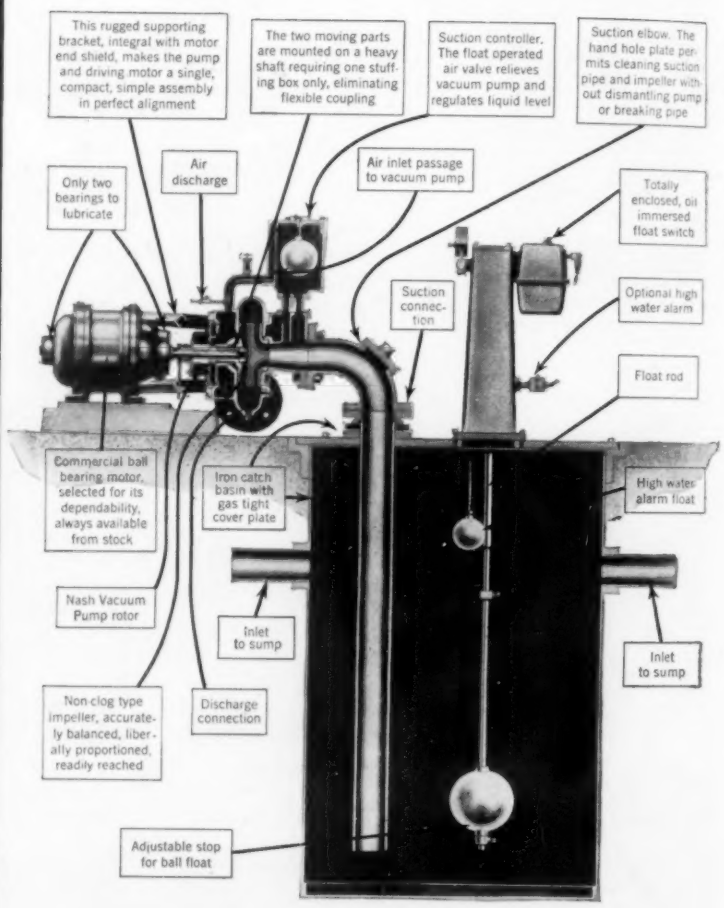
The main pumping unit is an efficient, two-bladed impeller. It handles solid matter without clogging.

Mounted on the same shaft with the centrifugal impeller, and enclosed in the same casing is a Nash Hytor Vacuum unit. When the pump starts, this unit quickly exhausts air from the suction pipe and draws sewage into the pump. Full rated capacity is delivered immediately.

Jennings Suction Sewage Pumps are furnished in sizes and capacities to meet all the usual requirements.

*Write for Bulletins 113 and 124.*

NASH ENGINEERING CO.
14 Wilson Road
SOUTH NORWALK, CONN.


This rugged supporting bracket, integral with motor end shield, makes the pump and driving motor a single, compact, simple assembly in perfect alignment
The two moving parts are mounted on a heavy shaft requiring one stuffing box only, eliminating flexible coupling
Suction controller. The float operated air valve relieves vacuum pump and regulates liquid level
Suction elbow. The hand hole plate permits cleaning suction pipe and impeller without dismantling pump or breaking pipe
Only two bearings to lubricate
Air discharge
Air inlet passage to vacuum pump
Totally enclosed, oil immersed float switch
Suction connection
Optional high water alarm
Float rod
Commercial ball bearing motor, selected for its dependability, always available from stock
Iron catch basin with gas tight cover plate
High water alarm float
Nash Vacuum Pump rotor
Inlet to sump
Inlet to sump
Non-clog type impeller, accurately balanced, liberally proportioned, readily reached
Discharge connection
Adjustable stop for ball float

# *Jennings* SUCTION SEWAGE *Pumps*

# Sewage Treatment Means Clean Streams

**SEWERAGE and SEWAGE DISPOSAL**

## *Sewage Dilution with Sea Water*

CERTAIN well-defined laws appear to control the dilution of sewage or fresh water when discharged into a body of water which has the salinity of ordinary ocean water. Sewage discharged below the surface of ocean water will, because it is lighter than sea water, tend to rise by gravity immediately to the surface of the salt water.

Sewage discharged from an outlet pointed directly upward will rise in the form of an inverted cone, the cross section of the cone expanding as it nears the ocean surface. Tests of the Los Angeles County Sanitation Districts showed that the diameter of the base of the cone at the surface was equal to about one-third of the distance from the point of discharge under water to the ocean surface.

Sewage discharged horizontally under sea water will rise to the surface of the sea water along a path resembling the curve of the path of a stone thrown horizontally, except that the curve is inverted. For this case, as before, the cross-sectional area of the curved sewage column or cone expands as the surface of the salt water is approached, and the area of the column or cone at the salt-water surface is equal to about one-third of the length of the path traveled from the outlet to the surface.

During its rise from the outlet to the ocean surface, the sewage obtains what is termed its initial dilution. By this is meant its first mixture with salt water before it comes into sight at the ocean surface. This dilution remains constant for constant conditions of discharge.

As soon as the mixed sewage and sea water has reached the ocean surface its tendency is to spread laterally over the surface in all directions. During the process of spreading, it mixes with sufficient sea water to give it what is termed its final dilution. The term stratification is used to define the action of the mixed sewage and sea water floating on the top of the ocean water. It does this because it is lighter and, following the law of gravity, it continues to float until such time as it has mixed with sufficient sea water to so increase its specific gravity that it will mingle intimately with the sea water underneath. The thickness of this floating sewage field remains fairly constant and is equal to about 1/12 of the distance from the sewage outlet to the ocean surface.

Dilution is most rapid during the rise of the sewage from the outlet to the ocean surface and is dependent upon the surface area of the rising column or cone of sewage exposed to the surrounding sea water. The degree of dilution from a given orifice or outlet therefore depends upon three factors, depth, direction and quantity of flow. Since initial dilution is such an important factor in determining the field area, the depth of outlet, direction of discharge, and quantity from a given orifice should be carefully considered in the design of an outlet.

To obtain high initial dilution with a given quantity of sewage and a given depth of sea water at the point of discharge, it is advantageous to discharge the sewage from the outlet laterally, as nearly horizontally as possible, thus increasing the length of the column or cone. The use of multiple outlets is advantageous, but in the use of multiple outlets it is necessary to avoid the error of so spacing them that the rising columns of sewage will mingle or conflict before reaching the ocean surface. Should the columns merge below the ocean surface, the surface area of the column in contact with the clear salt water is reduced and the initial dilution correspondingly decreased.

A. M. RAWN,
Assistant Chief Engineer, Los Angeles County Sanitary Districts.

## *Growth of Sioux Falls Made Treatment Plant Necessary*

THE city of Sioux Falls, S. Dak., with a population of approximately 35,000, is situated on a bend of the Sioux River, which is a non-navigable stream. The flow of this river is quite variable, ranging from a minimum recorded flow of 9 to a maximum of 500 cubic feet per second. As originally designed and built, the sewerage system emptied into the river at three main outlets.

In 1910 the city had a population of approximately 14,000 people, and during the next decade its population practically doubled. During this period of growth there was added to the industries of the city a large meat-packing plant, which has been steadily growing and has exercised a marked influence upon the liquid wastes of the city up until the present time. The waste from this source alone is approximately 45 per cent in volume of the total amount of waste produced by the rest of the city.

For several years the volume of flow in the river had been insufficient to provide adequate dilution for the ever-increasing amount of liquid wastes discharged into it. As a result, the river was offensive both to sight and smell for miles below the city, with an absence of fish life, causing much just complaint from the riparian owners downstream. This was the condition which the city faced in the summer of 1925, when the first definite steps were taken to deal with the problem.

In August, 1927, the first units of a sewage treatment works were placed in operation. This plant is what is known as the separate sludge digestion type, with trickling filters, and consists of coarse bar screens, three grit chambers, measuring weir and flow gage, two clarifiers or sedimentation tanks, three sludge digestion tanks, two sludge pumps, dosing tank, filter bed and sludge drying bed. To this was added in 1929 a gas collection and heating system for controlling temperatures of the sludge digestion tanks. On account of topographical conditions, the plant is of the gravity type throughout, so far as the bulk of the city sewage is concerned, the only pumping required being the pumping of sludge. However, the sewage from the packing industry and the adjacent district is pumped into the main treatment works from a small sewage-pumping station.

R. E. BRAGSTAD,
City Engineer.

## *Control of Scum in Sewage Tanks*

THE circulation of sludge liquor for control of scum formation in sludge digestion was reported by Dr. A. M. Buswell in connection with experimental studies of separate digestion at the Illinois State Water Survey at Urbana, Ill. The tank had a capacity of 1,900 gallons and was 7 feet 8 inches in diameter by 8 feet 6 inches deep. It was provided with a fixed cover and central gas-collecting dome 2 feet 4 inches in diameter.

Stiff scum built up to a depth of 26 inches, even though a grid, as suggested by Dr. Imhoff, was installed. A pump and piping were installed so that liquor could be pumped at the rate of 10 gallons per minute and allowed to flow onto the scum. Ten days' circulation disintegrated the scum. Thereafter circulation for 5 to 10 minutes a day prevented scum formation.

The effect of circulation on foaming was next tried. Vigorous foaming was induced by raising the temperature of the scum to 37 degrees Centigrade. The pump was then started. Within 3 minutes the foam had subsided 7 inches. Thereafter routine circulation for 5 to 10 minutes a day was usually sufficient to prevent foam formation.

Dr. Hatfield installed circulation in 4 of the 18 gas collectors of a foaming Imhoff tank at Decatur. During 6 weeks' operation the foaming was so well controlled that connections were placed in all of the 108 gas collectors of the 6-tank plant.

The cost of circulation for another plant was estimated at $5 per day, compared with $100 for the use of lime to check foaming.

—*Industrial and Engineering Chemistry.*

# SERVICISED WINS

# AFTER 14 TESTS

OTTUMWA'S city fathers may be descendants of the next state south; anyhow they want to be sure they are right.

*The photograph shows Quinn & Brady's men laying 25,000 square feet of 1½" Servicised Vibrated Asphalt Bridge Planking on the Market Street Bridge at Ottumwa, Iowa—the longest bridge within the State.*

**There was stiff competition on this job. Not until tests had been made on 14 samples by 4 independent laboratories and covering 11 items in the specifications was a decision rendered in favor of Servicised material — and it wasn't a question of "just as good" but Servicised was proven *best*.**

**Self-healing, slow-wearing, noise-deadening, waterproof, resilient, non-slip and swiftly laid by ordinary labor, Servicised Bridge Planking gives most pavement value per tax dollar. Its companion, Servicised Industrial Flooring brings like qualities into the cold storage warehouse, ice cream plant, dairy, factory and freight shed. Ask for a demonstration.**

**Expansion Joints**
**Rail Filler**
**Industrial Flooring**
**Roofing**
**Waterproofing**
**Sewer Pipe Material**

**Servicised Premoulded Products, Inc.**

*General Distributors for Servicised Products Corp.*

**53 West Jackson Blvd. Chicago, Ill.**

# Construction and Maintenance

**Engineering and Highway Departments**

## *The Ocean Shore Highway in San Francisco*

OCEAN Shore Highway in San Francisco is planned to replace the present narrow, steep and crooked road paralleling the ocean shore from San Francisco to Santa Cruz. Its construction is by Joint Highway District No. 9 of the state of California, composed of San Francisco, San Mateo and Santa Cruz Counties, which will provide respectively 55, 30 and 15 per cent of the cost. Preliminary engineering was done in the office of the City Engineer of San Francisco, but preparation of plans and specifications and supervision of construction is in the hands of the County Surveyors of San Mateo and Santa Cruz Counties.

The new road will begin at the Skyline Boulevard about 2 miles south of the San Francisco-San Mateo County line and descend to the abandoned roadbed of the defunct Ocean Shore Railway and follow this fairly closely to Santa Cruz. A cross-connection 1½ miles long will be made from Junipero Serra Boulevard to Skyline Boulevard just south of the county line. The distance from the county line to Santa Cruz via this cross-connection, Skyline Boulevard, and the new highway will be 74 miles as against 91 miles by the existing road. The right-of-way will be 100 feet wide and the roadway 40 feet.

The first construction undertaken is that of a road 4.6 miles in length from a point near Rockaway Beach to Montara, which will be 3 miles shorter than the present route over the mountain and will cross the westerly spur of Montara hill 400 feet lower, or at elevation 270 feet. This drive around San Pedro Point will be very picturesque and will include several concrete bridges and one tunnel.

Although the railway suspended operation a decade ago and the roadbed has lain idle since then, some of the former owners have attempted to exact extortionate prices from the district for right-of-way and it was necessary to bring condemnation proceedings.

On account of limited funds, for the present the roadway will be graded to 25-foot width, and an 18-foot strip will be prepared for traffic. Bids for this work were received and contract awarded on May 20, 1930, to A. J. and J. L. Fairbanks, Inc., for an estimated amount of $109,000.

M. M. O'SHAUGHNESSY,
City Engineer.

## *Control of Pavement Cuts in Detroit*

THROUGH the cooperation of the paving division and the various public utilities, Detroit is spared an unnecessary number of cuts in new paving. Property owners are penalized by having to pay large fees for permits to cut a pavement if they do not have house connections brought to the property line before the pavement is laid.

Wherever possible, the water and gas mains are located in the space between the curb and the sidewalk, one on each side of the street. This eliminates cutting the pavement, as the service pipe can be driven under the pavement. Very few lateral sewers are located in the streets. When it is necessary to locate the sewer in the street, the paving is delayed until the sewer is installed. The sewer is located outside the proposed curb line, and extensions are carried to beyond the opposite curb line for each lot.

When a petition is received to pave a street, and the pavement is authorized by the Common Council, the public utilities and abutting property owners are notified that the street is to be paved and they are given 90 days to install mains and house services. Occasionally a pavement is delayed to permit the laying of large water or gas mains and in other cases the main is rerouted to follow adjacent parallel streets. As a result of this cooperation, there are few cuts in new pavements. The constant growth of the city requires additional mains and conduits, as well as service lines to the new buildings, so that there are a large number of cuts each year in the older pavements.

Except in emergencies, a permit must be obtained from the Department of Public Works before an opening is made in a street or an alley, and a deposit, sufficiently large to cover the cost of inspection and replacing the pavement, is required at the same time from plumbers and drain-layers. The unused balance of the deposit is returned after the backfilling and repaving are completed. No deposit is required from the public utilities, as they are billed monthly for all inspection and repaving charges.

The Department of Public Works replaces the pavement for all cuts except those made by the public utilities, which replace all pavement except the asphalt top.

The backfill is tamped in layers 3 inches thick and the broken concrete and asphalt placed on top. The top of the fill is left from ½- to ¾-inch above the pavement. All lumps over 2 inches in diameter are broken up before using for backfill, and the use of frozen dirt or soft mud is forbidden. When the excavated dirt is not satisfactory for backfill, other dirt must be procured.

The materials used for replacing the pavement must meet the requirements of the paving specifications. Concrete must conform to the specified mix and consistency and be tamped into place. Whenever possible, concrete is replaced within 24 hours, although during the rush season this is not always possible.

Core tests are taken at irregular intervals from the paving patches. When this was started in 1928, several patches, unsatisfactory in the character of backfilling and quality of concrete, were found and in several cases there was a space between the concrete and the top of the backfill. The attention of the supervising inspectors and the public utility superintendents was called to the results of the tests, and a decided improvement was found in the work by the later core tests. The 1929 tests show that the concrete averages well over 2,500 pounds at 28 days.

PERRY A. FELLOWS,
City Engineer, Detroit, Mich.

LOUISIANA ROADS ARE NOW MAINTAINED FREE FROM PUNCTURING MATERIAL

Louisiana has equipped a fleet of Dodge trucks with three high-voltage magnets which are constantly in operation sweeping the roads for nails and stray bits of steel and iron that are such a menace to tires. The magnet road sweepers are operated every month in the year and have saved their price several times over to motorists in preventing punctures

Charging floor,
Spring Lake, N. J.
40-ton capacity
Morse Boulger
Destructor plant

# Modern Incineration

## *for this clean modern resort community.*

THEY simply couldn't take chances with any sort of nuisance, here! Spring Lake's fine ocean front is near the plant—and lined with private estates and great resort hotels. This pleasant beach city of the South Jersey coast could not afford any nuisance whatever. The site for the plant was close to everything—right in town—famous Monmouth Hotel 1200 yards away.

They investigated, and chose Morse Boulger—on its record of complete, economical, odorless incineration!

***A helpful booklet is free to municipal officials for the asking***

**MORSE BOULGER DESTRUCTOR COMPANY, INC.**
**205C East Forty-Second Street New York, N. Y.**

*HEAVY-DUTY INCINERATION*
**MORSE BOULGER**
**DESTRUCTORS**

**Spring Lake chose Morse Boulger for *Complete, Economical, Odorless* results**

Tested at the peak of the hotel season, this clean, efficient, modern plant, performed exactly as expected. Destruction of heavy hotel garbage and all other refuse from Spring Lake's summer population of 15,000 is complete—economical—*odorless.*

These are characteristic Morse Boulger results. Positive combustion of all gases, at high temperatures and with proper air supply . . . long travel of gases in high temperature area . . . efficient use of fuel value from combustibles in refuse—these are reasons.

74 installations within a mile of Times Square, New York—many of them in hotels as large as small cities—prove absence of nuisance in Morse Boulger Destructors. Investigate . . . for *modern* incineration!

# Who's Who in City & County Engineering

***One of a Series of Portraits of Engineering Officials Which Has Appeared Monthly Since April, 1928***

FREDERICK E. TOQUET
City Engineer
Bridgeport, Conn.
(Appointed 1930

JOHN THOMAS HURD
City Engineer
La Crosse, Wis.
(Appointed 1927)

GEORGE H. OVERING
County Surveyor, Webster Co.
Red Cloud, Nebr.
(Appointed 1907)

J. P. SCHWADA
City Engineer
Milwaukee, Wis.
(Appointed 1923)

CARL T. BOWEN
Engr. Mgr., Ottawa Co. Road Commission, Grand Haven, Mich.
(Appointed 1921)

C. U. BOLEY
City Engineer
Sheboygan, Wis.
(Appointed 1888)

E. H. DOUGLAS
County Engr., York Co.
York, Nebr.
(Appointed 1930)

WALLACE S. CARSON
City Engineer
Quincy, Mass.
(Appointed 1925)

NORBERT E. HARTUNG
City Engineer
Two Rivers, Wis.
(Appointed 1927)

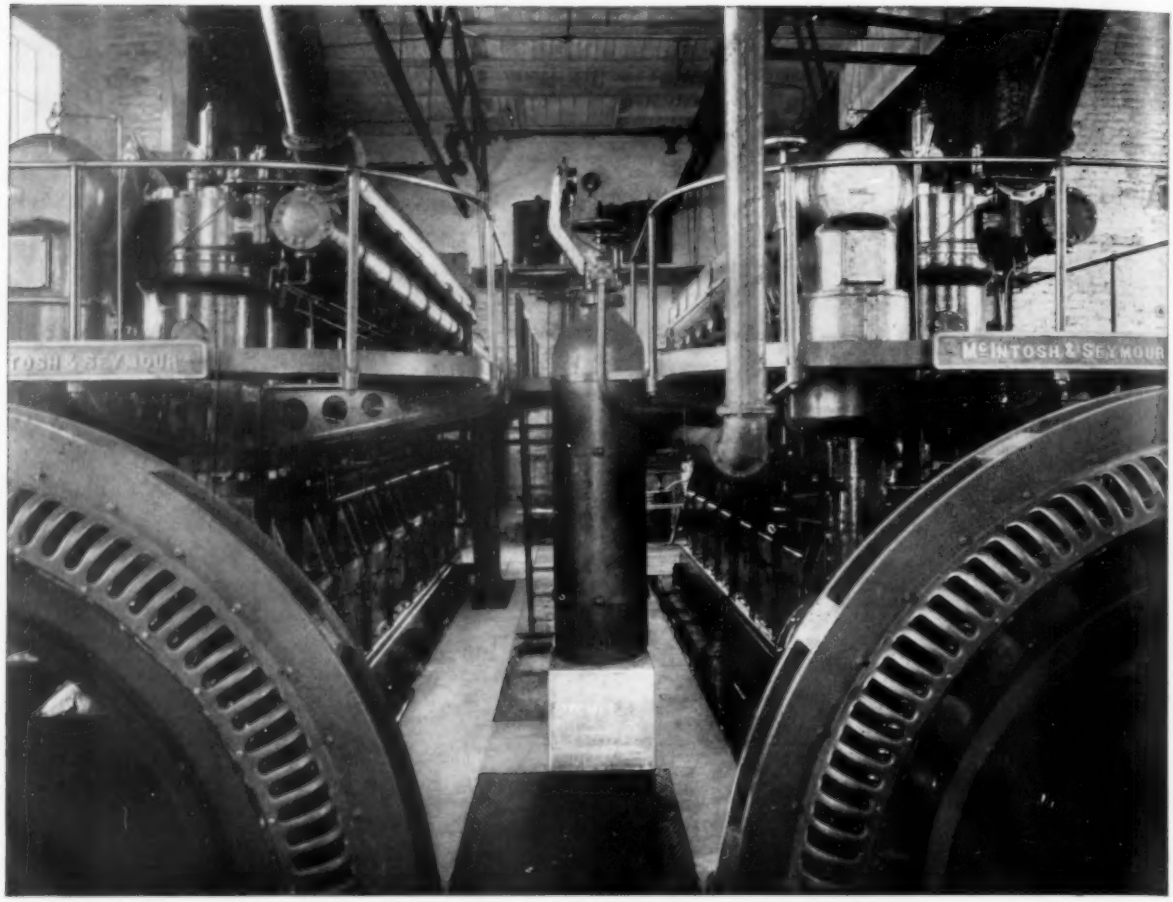
BERT C. GOWEN
City Engineer
Wausau, Wis.
(Appointed 1909)

JOHN B. WRIGHT
Municipal Engineer
Stratford, Conn.
(Appointed 1928)

L. F. GOTTSCHALK
County Surveyor, Platte Co.
Columbus, Nebr.
(Appointed 1900)

BEN KING
City Engineer
Watertown, Wis.
(Appointed 1930)

J. N. SLOAN
County Engr. & Supt., Iosco Co.
East Tawas, Mich.
(Appointed 1926)




# Operating costs less than 1 cent per kw-hr. Total with fixed charges, barely over 1½ cent —and this with load factor of only 25 per cent

TARBORO, N. C., will tell you what good Diesel engines can do where a steam plant is inadquate and too expensive to operate.

Two years after the above two 900-hp. 8-cylinder McIntosh & Seymour Engines had replaced the old municipal steam plant, Tarboro had reduced its consumer rate for electricity, had reduced its tax rate, was considering further tax reduction, and the Mayor was thoroughly convinced that the city had acted wisely.

The headline figures, taken from ten months operating records, cover a period when the load was small and fluctuating, and the plant had not yet been able to utilize its real capacity.

That costs will be even lower after citizens more fully appreciate the superior service and after anticipated city growth, is surely a reasonable assumption.

Throughout the country, municipalities, public utilities and manufacturers who have installed Diesel power judiciously—in new plants, as an auxiliary, or to stop loss incidental to old steam equipment—will testify to the service improvement, savings and general satisfaction.

***Let us submit references, and data based upon your own conditions.***

**McIntosh & Seymour Corporation**

*Division of American Locomotive Company*

**Main Offices and Works: Auburn, N. Y.**

| New York City | Jacksonville, Fla. | Houston, Texas |
|---|---|---|
| 30 Church St. | 412 Bisbee Bldg. | 2703 Esperson Bldg. |

| Kansas City, Mo. | San Francisco |
|---|---|
| 1016 Baltimore Ave. | 514 Matson Bldg. |

**McINTOSH & SEYMOUR DIESEL ENGINES**

# "Our Best Playground Idea"

**Carried Out in 1930**

## *Modern Swimming Facilities*

A SWIMMING pool with a separate wading pool on one side, and a bath-house on the other, including a complete line of equipment, was opened last spring at Wausau, Wis.*

The swimming pool is 150 feet long and 50 feet wide, is 2½ feet deep at the shallow end, sloping gradually to 5 feet deep for 90 feet, then to 9 feet at the drains, which are 18 feet from the end of the pool. This makes the deepest water directly in front of the two diving boards, the diving tower being located between the boards. The water of the pool is kept at drinking water standard at all times.

There are twelve light standards, six on each side, which light the pool for night swimming.

The bath-house, which is located on the east side of the pool, is of wood construction and contains two dressing-rooms, a checking-room, showers and the filter system.

A children's wading pool is located on the west side of the pool, just outside the 5-foot chain-link fence that surrounds the swimming tank. This pool is 117 feet long and 30 feet wide through the center. The side of this pool opposite the swimming pool is constructed on a curve which swings in towards both ends of the pool, where the construction is such that a square of about 10 feet of shallow water is formed. This area is used by very small children.

Two small bath-houses, one for boys and one for girls, both with toilet facilities, are located on each end and on an axis through the pool.

The two pools and bath-houses are located on the shore overlooking the Wisconsin River, and about 12 feet above the average water mark. The wading pool is at the base of a slope 14 feet high on which has been constructed a series of terraces in the form of seats, having the same curve as the outside edge of the wading pool. This natural amphitheater will seat from 2,500 to 3,000 spectators.

This useful improvement was developed in an existing depression on the ground, and the whole development designed so as to take advantage of this feature. Large elm trees have been planted on top of the slope back of the seats, to give shade to those using the amphitheater.

The popularity of the pool and development was indicated last season when 45,000 used the swimming pool alone. This was an average of about 500 a day, which was about as large an attendance as could be successfully handled.

S. S. HORGEN,
Park Superintendent, Wausau, Wis.

* A panoramic view of this remarkable layout, with construction details, will appear in the 1931 Municipal Index.

## *An Alliance with Mothers*

SHORTLY after school closed this past summer, with the realization of the excellent work done by the various Parent-Teacher Associations in mind, I organized Mothers' Clubs at each of the seven playgrounds. The mothers took to the plan at once; and it is noteworthy that the attendance increased in every case about 100 per cent.

Committees from the clubs called on the Mayor and City Commissioners and obtained new community houses on five fields. These houses were built with a general outlay of about $10,000 each, and have of course greatly enhanced the general beauty and utility of each playground.

The interest of the mothers has been responsible for new equipment in many instances, and the mothers themselves have done a great deal toward beautifying the appearance of the playgrounds. They have also, in many cases, interested the fathers of the children, which is a great aid in developing community and civic pride.

The Mothers' Clubs have regular meetings, and are organized and working under direct supervision. In some of the clubs, the mothers have busied themselves with making curtains for the stage in their particular house, and all of them show a vivid interest in keeping the houses well decorated, having made draperies, etc., themselves.

I feel that such clubs are not only beneficial to the children and mothers, but to the general playground and recreational movement itself. The results will, in time, speak for themselves.

R. L. BASS, JR.,
Superintendent of Recreation, San Antonio, Texas.

### Competitors for the Prize

**The accounts on this page, and those to be presented in March, are among the entrants in the competition which closed February 1 and which was fully described in the January issue, on page 17.**

## *Efficient Play Apparatus*

WE have found wooden teeter ladders are one of the best pieces of playground equipment. They furnish all the exhilaration that swings produce, and yet give full, big-muscle exercise and do not monopolize a lot of time, because participants are willing to pass their turns to other children quickly. There is a thrill as participants are thrown wildly into the air when their companions crouch low at the other end of the ladder. Biceps, back, stomach and leg muscles are all stimulated, and the children shout as they fly high.

Metal ladders are so heavy and bungling, that we have continued with the old-fashioned wooden type. But there is one danger. The ends of the handles are so large that grips loosen, the child is thrown, and often hurt. To overcome this, we have purchased hand grips at hardware stores and screwed these on the lower side of the ends of the handles, thus allowing little fingers to clinch in a firm grip. With this improvement we have avoided falls, although previously we collected three broken arms, and many bruises.

By erecting tether-ball poles this summer we had a violent revival of interest for this old-fashioned game, which was so very old that it was new to almost everyone. This game became economically possible on a small budget when we substituted homemade wooden rackets similar to the three-ply paddle tennis paddles, instead of expensive tennis rackets, and by enforcing the rule that if a player hit the pole with his paddle, it gave a point to his opponent. Slender poles are cheap, and the regulation knitted balls last an unexpectedly long time if young men do not play. If there is danger of the poles' being stolen at night, we sink a pipe ⅛-inch in diameter larger than the pole, and this acts as a sheath, allowing the poles to be taken in at closing time and quickly dropped in place in the morning.

JOHN H. CHASE,
Superintendent, Youngstown Playground Association, Youngstown, Ohio.

## *Merits and Demerits*

OUR best playground idea of 1930 was a tie-up with the Indianapolis Police Accident Prevention Bureau, the Hoosier Motor Club Safety Department, and the *Indianapolis News*.

Merit points were given for participation in activities, attendance in city-wide programs, and playground beautification work. Demerits were also taken for crossings, playing in the street, unsportsmanlike conduct and insubordination.

Boys and girls with a minimum of 13 merits per week and of certain required merits were given tickets to theater parties in the city each week. A general safety picnic was also held. The boy or girl receiving the largest number of merits on each ground was awarded the city's official monogram.

Interest was created and kept by this system in all recreational projects and a keen adherence to safety principles was instilled. There were no injuries to children on the streets of Indianapolis last summer, and very few violations of the safety code were noticed. This system is a carry-over and adaptation of the boy school patrol that is used so effectively in Indianapolis.

DAVID B. GILGORE,
Director of Recreation, Indianapolis, Ind.

# Here's the Clean-Up Plant for Salem, Oregon

Salem, Oregon, is the state capital with a progressive population of 21,000. Their city selected the above modern "Pittsburgh-Des Moines" Incinerator to harmonize with the highly efficient sanitary conditions found in a state capital community, and also to give a reliable low cost performance—day in and day out. It destroys 50 tons of garbage per day—no smoke—no odors —no fumes.

## Pittsburgh-Des Moines Steel Company

**3481 Neville Island, Pittsburgh, Pa.** **685 Hudson Terminal Bldg., New York, N. Y.**

**Des Moines** **San Francisco** **Seattle** **Chicago** **Atlanta** **Dallas**

Do you mention THE AMERICAN CITY? Please do.

# METHODS and COSTS of REFUSE COLLECTION and DISPOSAL

## *How Irvington Educated Its Citizens to the Separate Collection of Waste*

SINCE the construction of the incinerator in Irvington, N. J., four years ago, the principal problem in garbage collection has been in the elimination of tin cans and other incombustible rubbish from the garbage.

Under the town ordinance, residents are required to make a separation of ashes and incombustible rubbish from garbage and burnable rubbish. Tin cans particularly interfere with the proper functioning of the incinerator, as it is impossible to consume the metal, and bottles melt and clog the grates.

In order to remedy this condition, the cooperation of the citizens had to be secured. Irvington is a rapidly growing community, and most of the growth is from the adjoining city of Newark, where separation of garbage is not required. The result was that these people had formed the habit of mixing garbage, ashes and rubbish of all descriptions together and could not understand the necessity of separation.

It was decided to conduct a campaign of education, and literature was prepared explaining the operation of the incinerator. Inspectors were then appointed and instructed to visit all residents not complying with the regulations, explain matters and request their cooperation. This brought about an immediate improvement. Some persistent violators were summoned to court and fined, but the majority were glad to cooperate.

Now, the inspectors merely make the rounds and, where they find a violation, wire a red ticket to the garbage container with a check mark against the particular violation or cause for non-collection. These efforts have resulted in a decrease of from 60 to 70 per cent in the amount of incombustible rubbish mixed with garbage.

I. J. CASEY, JR.,
Town Engineer.

## *Proposed Collection System for Pennsylvania City*

THE city of Greensburg, Pa., has tried both free disposal and contract disposal of garbage and refuse, and does not find much difference between the plans. Under the contract now in force the contractor pays the city $275 per month for the exclusive right to haul all garbage created in the city, using the garbage just as it comes from the city to feed pigs. No cooking or extra labor is required and this plan seems to be very successful, as during the past three years, less than 25 pigs have been lost through disease or broken glass. They have been sold by the hundreds to city butchers.

Garbage from hotels, restaurants and business houses is collected daily and from dwellings once a week. Greensburg is the county-seat and has a population of slightly less than 20,000. Between May and October, 1930, between 20 and 30 tons per day were collected, not including rubbish. For the year 1929, 9,397,050 pounds of garbage and 3,074,665 pounds of rubbish were collected.

A Morse-Boulger incinerator is used for the rubbish and excess garbage, and it is found very satisfactory. Through a system instituted by the present Superintendent, it is never necessary to use over 2 bushels of coal per 24 hours. The contractor uses Chevrolet one-ton trucks with watertight bodies for collection. The garbage and refuse are hauled to the incinerator and dumped on the floors, and the charge feeds dry and wet garbage alternately. Only two men are employed at the plant. They work ten hours per day and are paid by the month.

It has been suggested by the present Superintendent that the city take over the collection and disposal of all refuse, charging a nominal fee to make the Department self-sustaining. At a small fee of 15 cents per week for residential collection and a nominal fee for hotels, restaurants and business houses, it would never be necessary for the Department to ask the city for funds. The plan suggested was for the city to purchase fifty 20-gallon cans, and the residents each to purchase a can of the same size. The trucks would then leave an empty can and remove a full can, the cans to be emptied and washed at the plant. This plan would save work for the drivers and insure a clean truck, as well as eliminating spilling, odor and flies.

JOHN H. DERBY,
Superintendent, Greensburg Disposal Plant.

## *Cards Eliminate Telephone Calls*

WHEN the city of Providence, R. I., made its annual change from three collections a week to two for the winter months, a new system was adopted. Instead of merely changing the days of collection without any notification, which heretofore had resulted in a deluge of telephone calls to the office of the Incinerator Department by taxpayers who thought that they were being neglected, a card was sent to each house, telling on which days of the week the householder should expect the collector.

More than 45,000 of these 3 x 5-inch cards were distributed to the householders of Providence by the collection crews. Their use prevented the usual misunderstanding as to the exact day of garbage and refuse collection.

It was possible to use the cards only after the routes had been arranged to operate with a maximum of efficiency which enabled the Department to stand behind the information outlined.

IRVING STONE,
Superintendent, Incinerator Department.

## *Costs of Garbage Collection in New York State*

THE following figures include salaries of collectors and contract costs of garbage collection for cities in New York State. The list was prepared from data gathered by the New York State Bureau of Municipal Information:

| | |
|---|---|
| Albany | $3.75 per day |
| Auburn | Contract |
| Batavia | $8,000 yearly |
| Binghamton | $4.00-$4.20 per day |
| Cohoes | $4.00 per day |
| Corning | $650, yearly contract |
| Cortland | Contract, $22.60 per day |
| Dunkirk | $12,000, yearly contract |
| Glen Cove | $5.00 and $6.00 per day |
| Glens Falls | $5,300, yearly contract |
| Hornell | Contract |
| Ithaca | $4.00 per day |
| Johnstown | $3,600, yearly contract |
| Mechanicsville | Contract |
| Mount Vernon | $8.00, $5.00, $6.00 per day |
| Newburgh | Contract, $7,000 |
| Niagara Falls | $4.40 per day |
| Plattsburgh | $3,500, contract |
| Port Jervis | $4.00 per day |
| Rochester | $0.375 to $0.58 per hour |
| Saratoga Springs | $4.00 per day |
| Schenectady | $5.00 per day |
| Syracuse | $4.50 per day |
| Tonawanda | $10,800, yearly contract |
| Watertown | $10,000, yearly contract |
| Watervliet | $4.16 per day |
| White Plains | $4.00 to $5.00 per day |
| Yonkers | $5.00 to $6.00 per day |

CITY OF PROVIDENCE ====== INCINERATOR DEPARTMENT

**NOTICE**

November 1st, to May 1st.

Your Garbage and Rubbish
Will Be Collected

**TUESDAYS and FRIDAYS**

*Frank E. Waterman,* Commissioner of Public Works

TYPE OF CARD DISTRIBUTED IN PROVIDENCE TO ANNOUNCE THE CHANGE IN THE GARBAGE COLLECTION SCHEDULE

# WET SNOW

**WILL YOUR EQUIPMENT HANDLE IT ?**

**SNOGO**

SNOGO is guaranteed to handle wet snow of any consistency • • • It's record to date is snow containing over 50% moisture • • • in fresh light snow or water-soaked slush its capacity remains the same and is measured in tons per hour.

THE SNOGO CATALOG TELLS
THE COMPLETE STORY—WRITE FOR A COPY

**KLAUER MFG. CO.** DUBUQUE, IOWA

# "Keep Your Streets Clean"

**Items on Street Cleaning and Snow Removal**

## *Snow-Removal Costs and Methods from Scattered Points*

### Greenfield, Mass.

E. M. Schneck, Superintendent of Streets of Greenfield, reports that the appropriation for snow removal for 1930-31 is $6,000, although the appropriation for the previous year was $7,400. Two miles of streets are cleared of snow and about 72 miles are plowed. The streets that are cleared represent about 75 per cent of those in the business district and 5 per cent of the residential streets. Tractors and trucks with plows attached are used for snow removal in this city of 15,300 population.

### Little Falls, N. Y.

Little Falls has a population of 12,500 and makes no appropriation for snow removal. R. D. Austin, City Engineer, reports that the city clears 4 miles of streets, representing 70 per cent of the business streets and 20 per cent of the residential thoroughfares, and plows 25 miles. For this work three straight-blade plows mounted on trucks, one V-type plow and a tractor are used.

### Bradford, Pa.

The average annual expense of snow removal and plowing in Bradford is about $900, although no special appropriation is made for this work. According to a report from J. Henry Quirk, City Engineer, only 1 mile of streets in the business district is cleared of snow, while about 15 miles are plowed, using a tractor-mounted plow.

### Meadville, Pa.

Snow removal in Meadville is included in the general street-cleaning appropriation and, according to Roy L. Phillips, City Engineer, the city spends approximately $1,200 per year on this work. This takes care of partially clearing the entire business district of about 1½ miles of streets. The equipment used consists of one plow, hand shovels, one dump-wagon and one truck.

### Montpelier, Vt.

This city of 8,000 population clears about 1 mile of street in the business district and plows 56 miles, all in the business district. George A. Reed, Commissioner of Public Works, reports that no special appropriation is made for snow removal, the money for this work coming out of the street-maintenance fund. One blade-plow and two V-plows are used.

### Beloit, Wis.

The annual appropriation for snow removal in Beloit is $3,000. This provides for clearing 2 miles of streets and plowing 60 miles, 90 per cent of the business streets being entirely cleared. G. E. Heeburk, City Engineer, reports that trucks, tractors, graders and snow-scoops are used for this work.

### Middletown, Conn.

In Middletown, a city of 24,422, $5,000 is the annual appropriation for the removal of snow. Plows attached to motor trucks are used for this work, although none of the streets are entirely cleared, according to a report from G. Allen Schaefer, Superintendent of Public Works. In the storms so far this year snow has been removed from the business district by the unemployed. This labor is paid for by contributions to the Mayor's Committee on Unemployed. All trucks and supervision are furnished by the city.

### Winooski, Vt.

The report of Arthur J. Barry, City Engineer of Winooski, states that the appropriation for 1930-31 has been raised to $1,000, the amount for the previous year having been $500. Trucks with blade type plows are used in clearing 1½ miles of streets and plowing 12 miles. The entire business section of the city is cleared.

### Fargo, N. Dak.

Money needed for snow removal in this city of 30,000 population is taken from the street appropriation, there being no separate amount set aside for snow removal. According to Alex Duncan, Superintendent of Streets, 2 miles of streets are cleared and 20 miles are simply plowed. This represents 90 per cent of the streets in the business district. One 3,000-pound V-plow has just been added to the snow-removal equipment of the city, which also includes one tractor and one grader.

### Cincinnati, Ohio

According to John R. Manion, Superintendent of Streets, no specific appropriations for snow removal are made in Cincinnati. Snow has been very light for the past eleven years and the average amount spent for this work has been $3,900 per year. Twenty miles of streets are entirely cleared of snow and approximately 40 miles are plowed. The streets that are cleared represent 80 per cent of the business streets and about 5 per cent of the residential streets. Two plows on truck tractors, ten trucks and twelve wagons comprise the snow removal equipment of this city.

## *Streets and Sidewalks Cleaned in Alma, Mich.*

ONE mile of streets in the business section of Alma, Mich., is entirely cleared of snow, and approximately 25 miles are plowed. The annual appropriation of $2,000 takes care of clearing 90 per cent of the business streets and plowing all streets in the residential section. For this work, the city uses one Baker snow-plow on a 2½-ton Republic truck, and four horse-drawn plows for sidewalk work. All available dump-trucks are hired immediately at the beginning of a storm.

J. DONALD SULLIVAN,
City Manager and Engineer.

A HEAVY-DUTY INTERNATIONAL HARVESTER MOTOR TRUCK AT WORK CLEARING THE SNOW ON THE FAMOUS COCHRANE HILL ON THE IMPORTANT HIGHWAY BETWEEN CALGARY AND BANFF, CANADA

By adjusting the wings of the snow-plow, the width of cut was varied from 10 to 15 feet. The truck was of 160-inch wheelbase and equipped with 40 x 8 dual rear tires and 5-yard dump body. Three yards of coarse rock were loaded on the truck to provide the necessary traction. Very satisfactory progress was made in clearing the highway and bucking drifts on the 25-mile run from Calgary to Cochrane, the truck moving at a rate never less than 2 miles per hour

# A PUBLIC ALARM *with a* FINE SERVICE RECORD

Outdoor Diaphone installations provide very satisfactory service. Compressor is located inside building. Note location of Diaphone horn above the roof.

**Fires demand emergency action, particularly in those cities and towns depending upon a volunteer fire department for protection. The quickest and most accurate method of summoning the volunteer firemen is by means of a public alarm. Such an alarm should have:**

**(1) Extensive carrying power**
**(2) A distinctive and alarming tone**
**(3) Good coding qualities**
**(4) Reserve capacity**

**For years the steam whistle has made a dependable public alarm for cities and towns; but during the past several years the electrification of factories and water works, which formerly supplied 24-hour-a-day, all-year-round steam for this purpose, has made it necessary for fire chiefs and other city officials to look elsewhere for a satisfactory public alarm.**

**The most satisfactory modern public alarm available to take the place of the steam whistle is the Gamewell *Diaphone.* Its carrying power is tremendous; its tone is distinctive and alarming; it will code rapidly; and it has a reserve capacity that acts as a safeguard against shut-downs in the electric power supply.**

**Furthermore, the *Diaphone* is the basis of a modern street fire alarm box system. Once it is installed, street fire alarm boxes of the latest type can be added later as the city grows, without discarding any of the original equipment.**

***Write for a copy of leaflet No. 2022***

## THE GAMEWELL COMPANY

**NEWTON, MASSACHUSETTS**

***"A Box and Block"***

# TRAFFIC—FIRE—SAFETY

**Items for Departments of Public Safety**

## *Unemployment Relief and Elimination of Fire Hazards*

THE period of stringency in the employment situation is an excellent time in which to make improvements in buildings to make them more secure from the dangers of fire. These include such items as the construction of fire walls, the moving of hazardous equipment to safe isolated locations, the extension of water systems, automatic sprinkler protection, etc. Such activity is suggested by the National Fire Protection Association, one of whose members, a large industrial corporation, has shown particular concern in having its several plant managers see to it that all possible improvements to bring about increased fire protection, for which recommendations were on file, should be done at the present time of slack employment. This work, particularly so far as it can be done by the plant force, keeps men on the payroll, helps to reduce the need for charity relief measures, and is manifestly desirable from the standpoint of greater fire safety.

Fire chiefs and fire prevention bureaus could perform a timely service in bringing this idea to the attention of owners and users of industrial and commercial property, and of householders generally.

## *Ten Per Cent Increase in National Annual Fire Loss Indicated*

PRELIMINARY estimates by the National Fire Protection Association, on the basis of losses reported to insurance companies, place the 1930 fire loss at $465,000,000, approximately 10 per cent greater than last year. In view of reduced commodity costs during the past year, the Association states that it is quite likely that the actual loss in burned property, especially stocks and merchandise, may actually be considerably in excess of that indicated by the figures. However, there were only five fires with a loss exceeding $1,000,000 in 1930, as compared with fifteen in 1929 and twenty in 1928.

While the largest number of big fires were in miscellaneous manufacturing plants, property at rail and water terminals suffered heavily. Many lumber mills contributed heavy losses. Nearly all these properties, according to the Association, were poorly protected against fire. It states that in this respect rail and water terminals are notorious and may be expected each year to contribute a large share of the big fires.

Sixty-five fires involved losses so large (over one-quarter million dollars each) as to be classed as of conflagration proportions. While the geographical distribution in general follows the known concentrations of burnable values, it is significant, the Association points out, to note the considerable number which occurred at points where the property was situated beyond the limits of a municipal water supply or organized fire department.

## *Traffic-actuated Signals Favored in New Jersey*

IN a statement headed "Regulating Installation of Traffic Signals in New Jersey," Russell S. Wise, Chairman of the recently organized State Traffic Commission, discusses the Commission's traffic signal code (abstracted on page 126 of THE AMERICAN CITY last month). In this discussion, published in the *United States Daily* of January 12, the special value of traffic-actuated signals under certain conditions is emphasized. Says Chairman Wise:

"The ideal traffic signal—one that operates efficiently under all conditions—has not yet been produced, but manufacturers are making rapid strides along this line. One of the newer types which the Traffic Commission has recommended for highways where the bulk of the traffic is on the major highway, is the one that is operated by the traffic as it approaches the intersection and not on a predetermined cycle of minutes or seconds as in the average types of automatic lights. This new signal is working efficiently on several of the heavily traveled state highways."

## *Effect of Automatic Signals on Traffic Accidents*

FOR more than a year and a half, staff engineers of the National Safety Council have been gathering information to indicate the effect of automatic traffic signals on traffic accidents at intersections where they are installed.

The results of this undertaking will surprise many a public official and civic-minded citizen who has had a feeling that traffic signals, as might logically be expected, are a conclusive answer to the accident problem at intersections. But it confirms the opinion of traffic engineers that too little science is generally used in the selection of locations and equipment for the control of traffic by signals to insure a uniformly beneficial effect on the accident rate.

Out of 354 intersections for which trustworthy data were available, 38 per cent showed no reduction in accident accompanying the installation of signals. When the percentage reduction in accidents for these 354 intersections was averaged, the result was 20.5 per cent.

Many of the intersections studied were signalized to prevent accidents. (Either that was the avowed purpose of those who authorized their installation, or traffic counts showed that there could not possibly have been enough congestion to warrant their installation for the purpose of facilitating traffic alone.) In such cases, many showed no accidents at all or only one or two before the installation of the signal. In other words, many a signal has been put in to prevent accidents where there are practically none to be prevented. Interesting sidelights were uncovered in the fact that for few than 20 per cent of the intersections could any records be found of traffic counts having been made previous to the installation of signals.

Detailed studies indicated that signals have a more beneficial effect on accidents at simple intersections than at complicated ones, and that the reduction in accidents in general varies with the type of district, being greatest in the best residential district and diminishing in the following order: medium residential district; secondary business district; central business district; poor residential district; industrial district. The reduction in accidents did not seem to be influenced materially by the presence of street cars at the intersection, the amount of police supervision following the installation of the signals, the length of the cycle, or the amount of traffic at the intersection.

Analysis of certain cases in which there were extremely large increases in accidents, or extremely large decreases, were made by developing collision diagrams. These showed that increases in accidents are sometimes due to improper placing of signals, confusion of control methods, and lack of enforcement. Greatest reduction could be expected where most of the accidents were right-angle collisions. A thorough analysis of the traffic and accident conditions at the intersection previous to the installation of the signal, and as the basis for its design and timing, is the best assurance that this type of equipment will be effective in keeping the accidents at a minimum.

Complete reports are being published as a series of six articles in *Public Safety*, a magazine published by the National Safety Council. The first three of these six articles describe the facts discovered in studying hundreds of signalized intersections in more than thirty American cities, and the second three offer practical suggestions for the planning of signal equipment which will reduce accidents.

JAMES STANNARD BAKER,
Assistant Traffic Engineer, National Safety Council, Chicago, Ill.

See pages 92, 112, 126, 142 and 152 for other articles on public safety.

# "I Can Cut Down That Death Roll!"

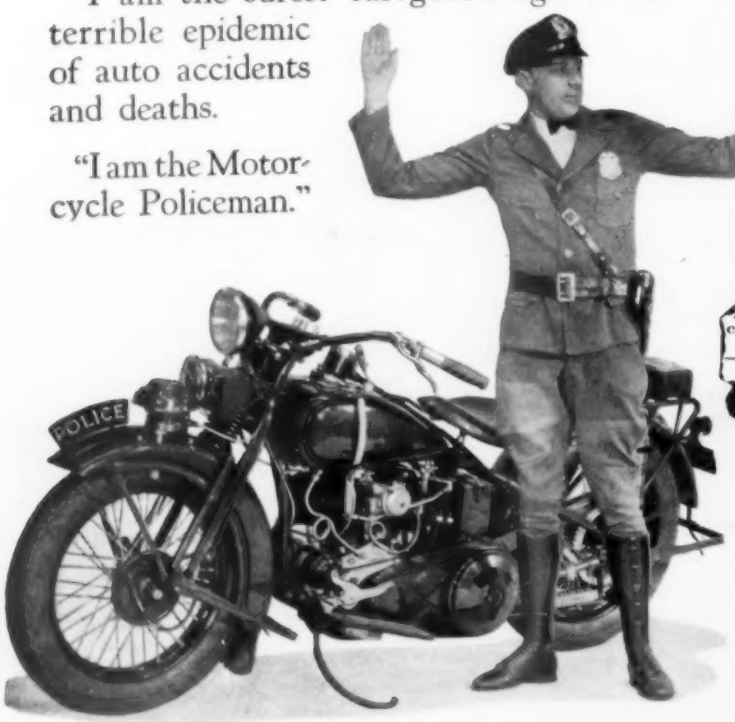
"I WILL undertake to reduce the auto fatalities in your community. I have done so in many others.

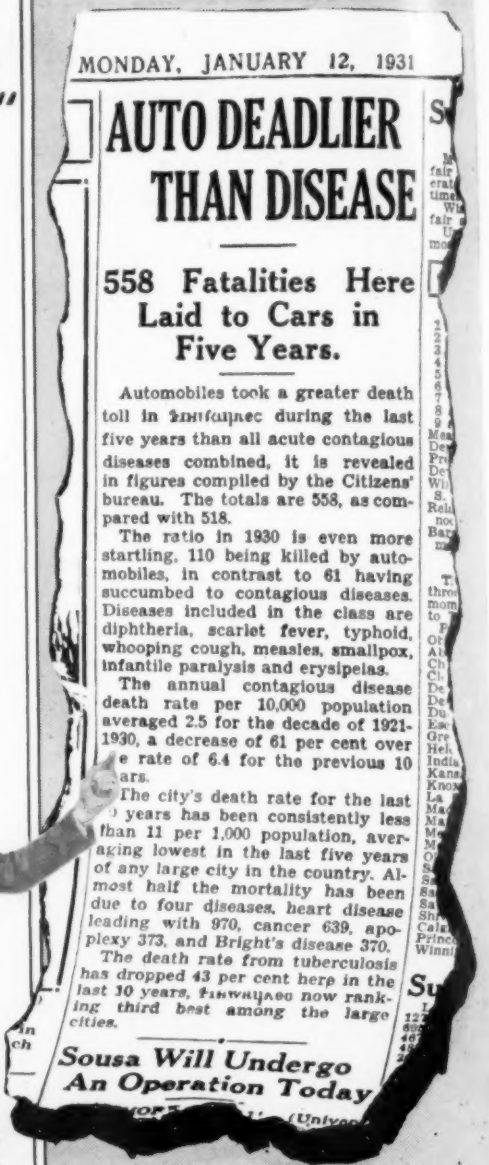
"Motorists drive safely and sanely when they know that I am on the job. They never speed past or near me. A glimpse of my uniform checks them.

"I save hundreds of lives every year. Cities with the lowest motor-mortality records employ me — most of them give me a Harley-Davidson to ride.

"I am the surest safeguard against the terrible epidemic of auto accidents and deaths.

"I am the Motorcycle Policeman."



MONDAY, JANUARY 12, 1931

## AUTO DEADLIER THAN DISEASE

### 558 Fatalities Here Laid to Cars in Five Years.

Automobiles took a greater death toll in [illegible] during the last five years than all acute contagious diseases combined, it is revealed in figures compiled by the Citizens' bureau. The totals are 558, as compared with 518.

The ratio in 1930 is even more startling, 110 being killed by automobiles, in contrast to 61 having succumbed to contagious diseases. Diseases included in the class are diphtheria, scarlet fever, typhoid, whooping cough, measles, smallpox, infantile paralysis and erysipelas.

The annual contagious disease death rate per 10,000 population averaged 2.5 for the decade of 1921-1930, a decrease of 61 per cent over [illegible]e rate of 6.4 for the previous 10 [illegible]ars.

The city's death rate for the last [illegible] years has been consistently less than 11 per 1,000 population, averaging lowest in the last five years of any large city in the country. Almost half the mortality has been due to four diseases, heart disease leading with 970, cancer 639, apoplexy 373, and Bright's disease 370.

The death rate from tuberculosis has dropped 43 per cent here in the last 10 years, [illegible] now ranking third best among the large cities.

**Sousa Will Undergo An Operation Today**

**Get this FREE BOOK**

Find out how to use motorcycle men to best advantage in curbing "Autocides". Check into the reasons why more Harley-Davidson Motorcycles are used in police work than all other makes combined. Our new Police Booklet gives all these facts. Write for free copy.

Let your local dealer show you the 1931 Harley-Davidson Models.

HARLEY-DAVIDSON MOTOR COMPANY
Dept. M, Milwaukee, Wis.

# HARLEY-DAVIDSON
*The Police Motorcycle*

CHARLES STINSON
Fire Chief
Emporia, Kans.
(Appointed 1910)

HARRY STEVENS
Fire Chief
Monrovia, Calif.
(Appointed 1917)

W. J. WALKER
Police Chief
Santa Cruz, Calif.
(Appointed 1929)

CHARLES J. BRENNAN
Chief Engr., Fire Dept.
San Francisco, Calif.
(Appointed 1929)

LLOYD B. CANFIELD
Fire Chief
Beverly Hills, Calif.
(Appointed 1925)

# Who's Who in Public Safety

***The 38th of a Series of Portaits of Fire and Police Chiefs Which Has Appeared Monthly Since January, 1928***

R. L. BERGH
Police Chief
Burbank, Calif.
(Appointed 1929)

FRANK W. FULLER
Fire Chief
Brainerd, Minn.
(Appointed 1929)

A. G. SILBERSTEIN
Fire Chief
Woodland, Calif.
(Appointed 1905)

EDWARD JENSEN
Police Chief
Albert Lea, Minn.
(Appointed 1922)

FRANK B. HIGGINS
Police Chief
South Pasadena, Calif.
(Appointed 1916)

W. C. NORTON
Fire Chief
Winona, Minn.
(Appointed 1898)

W. S. KIRBY
Police Chief
Pomona, Calif.
(Appointed 1930)

CHARLES E. TOVEE
Fire & Police Chief
Chico, Calif.
(Appointed 1921)

CHARLES C. BLAIR
Police Chief
Beverly Hills, Calif.
(Appointed 1917)

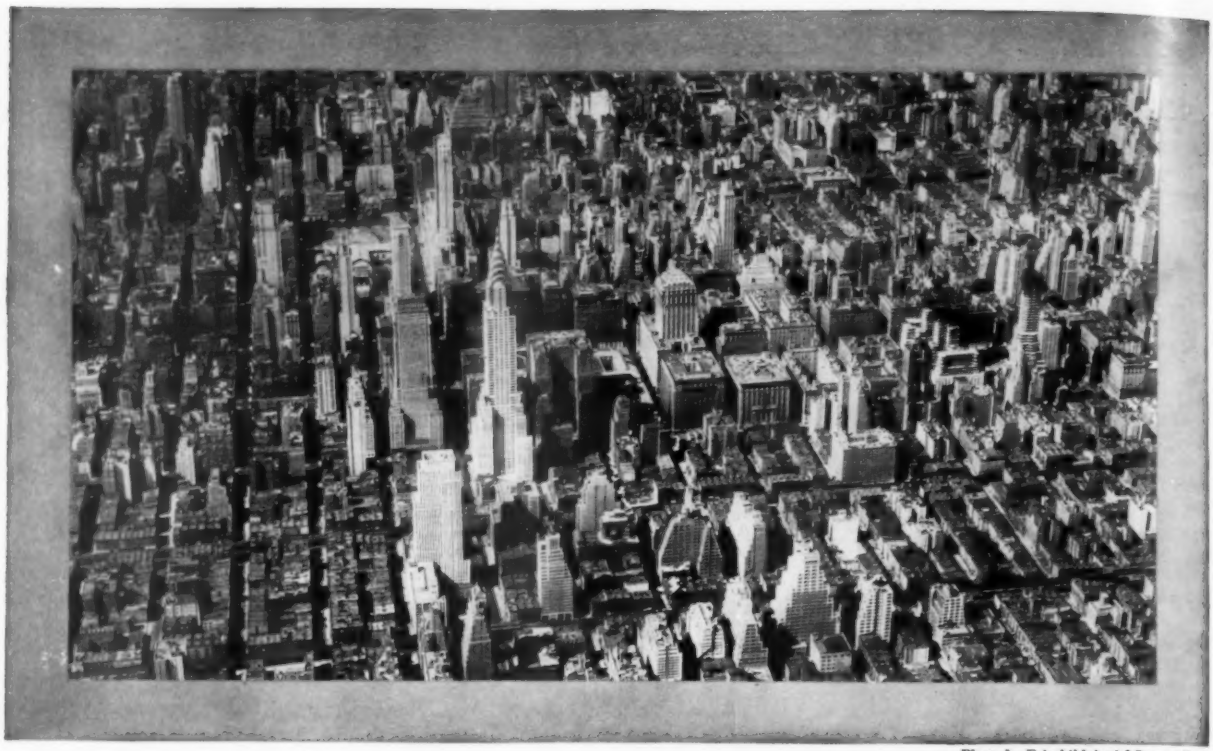


Photo by Fairchild Aerial Survey, Inc.

# Over 4000 miles of CAST IRON MAINS distribute water in the City of New York

The water system which supplies the City of New York is regarded as one of the engineering wonders of this age. The chief supply line begins far up in the Catskill Mountains where a tunnel 18 miles long brings the water to the Ashokan Reservoir. Thence, a gigantic aqueduct traverses several valleys by pressure tunnels and passes under the Hudson by means of a remarkable inverted syphon, 3000 feet long and 14 feet in diameter. This syphon is bored through solid rock and lies 1,100 feet beneath the river bed.

That New York looks far to the future in planning her great water system is evidenced by the fact that long-lived cast iron pipe has been used for the majority of the distribution mains. Today more than 4000 miles of cast iron mains, in sizes from 4-inch to 60-inch, distribute water to every section of the city.

The reason for the long life of cast iron pipe is its effective resistance to rust. Cast iron is the only ferrous metal for water and gas mains that will not disintegrate from rust. This characteristic makes cast iron pipe the most practicable for underground mains, for rust will not destroy it.

The Cast Iron Pipe Research Association offers to taxpayers, engineers and city officials, detailed information regarding the use of cast iron pipe for gas, water, sewers, culverts and industrial needs. Address: The Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, 122 South Michigan Avenue, Chicago, Ill.

Reg. Trade Mark

CAST Q IRON

*Bell and spigot cast iron pipe embodies the three indispensable features of a perfect pipe joint—provision for expansion, contraction and deflection.*

Cast iron pipe bearing the "Q-check" trade mark is obtainable from the following leading pipe founders: Alabama Pipe Company, Anniston, Ala.; American Cast Iron Pipe Company, Birmingham, Ala.; James B. Clow & Sons, 219 N. Talman Avenue, Chicago, Ill.; Donaldson Iron Company, Emaus, Pa.; Glamorgan Pipe and Foundry Company, Lynchburg, Va.; Lynchburg Foundry Company, Lynchburg, Va.; National Cast Iron Pipe Company, Birmingham, Ala.; United States Pipe and Foundry Company, Burlington, N. J.; Warren Foundry and Pipe Company, 11 Broadway, New York.

# CAST IRON PIPE

FEBRUARY, 1931
Vol. XLIV, No. 2

The American City

470 Fourth Avenue
New York
50 Cents, $4 a Year

# A New Development in Sewage Treatment Plant Design

*By* L. R. HOWSON
Alvord, Burdick & Howson, Consulting Engineers, Chicago, Ill.

THE Aurora, Ill., sewage treatment plant is of the separate sludge digestion, sprinkling filter type. The sewage, upon reaching the plant, passes progressively through the following steps:

1. Screening through an automatically operated mechanically raked bar screen.
2. Removal of grit by mechanical means, followed by washing for removal of organic matter.
3. Solids removed by settling in mechanically cleaned tanks also equipped with skimming facilities for oil removal.
4. Digestion of the solids in mechanically stirred separate sludge digestion tanks equipped for gas collection and hot-water sludge heating. Sludge dried on open sand beds.
5. Pumping of the settling tank effluent to the dosing tanks, thence passing through sprinkling filters before discharge to the Fox River.

The plant design attempted to make operation convenient and to provide so far as practicable plant facilities for performing mechanically, and in some cases automatically, those operations which are most disagreeable and accordingly most frequently neglected.

The sewage treatment works site is located along the Fox River about three miles downstream from Aurora. The plant lies between two main paved highways which parallel the river and are separated but a quarter of a mile. Particular attention was therefore paid to the architectural design.

**Attractiveness Combines with Utility in Aurora Achievement**

***which unites modern architecture, compact plant layout, centralization of plant operations under one roof, utilization of mechanical appliances for distasteful operations frequently neglected if done by hand, and the collection and utilization of gas for heating buildings and sludge.***

### Quantity of Sewage

The plant is designed to serve 67,000 people and care for a normal dry-weather sewage flow of 6,500,000 gallons per day. The sewage is from a combined system and is typically domestic.

The plant is so designed that during storm, flows up to three times the normal average, that is, 19½ million gallons per day, is given screening, grit removal and settling treatment. Of this total, two-thirds is given secondary treatment through the sprinkling filters, one-third being bypassed from the tanks directly to the river.

The intercepting sewer is designed for conditions in 1970, with an estimated population of 140,000 people and a unit flow of 350 gallons per capita. The intercepting sewer capacity is 74 cubic feet per second. For the present treatment plant capacity, all flows in excess of 29 cubic feet per second are bypassed in time of storm. The intercepting sewer consists of approximately 7 miles of pipe varying in size from 15 to 69 inches. The sewage requires from two to four hours for its passage from the center of the city to the plant.

### Factors Influencing Type of Plant

Preliminary to a decision as to the type of plant to be built, there was prepared a careful analysis of the local requirements for treatment and the various methods of treatment applicable thereto. Among the factors influencing the selection of the separate sludge digestion, sprinkling filter process were the following:

a. The annual cost was lower than for pre-settling activated sludge with digestion (the process next in favor.)

b. The sprinkling filter type would produce an effluent well above the requirements for discharge into the Fox River, and additional expenditures for the better effluent produced by activated sludge would not be justified.

c. The fact that the site was underlaid by rock, combined with the desirability from the efficiency standpoint of pumping settled rather than raw sewage, resulted in separate sludge digestion tanks having a material advan-

GENERAL VIEW OF THE AURORA, ILL., SEWAGE TREATMENT PLANT

tage over Imhoff tanks. In addition, the greater practicability of gas collection, sludge heating and decreased digestion capacity favored the adoption of the separate sludge digestion type.

### Bar Screen

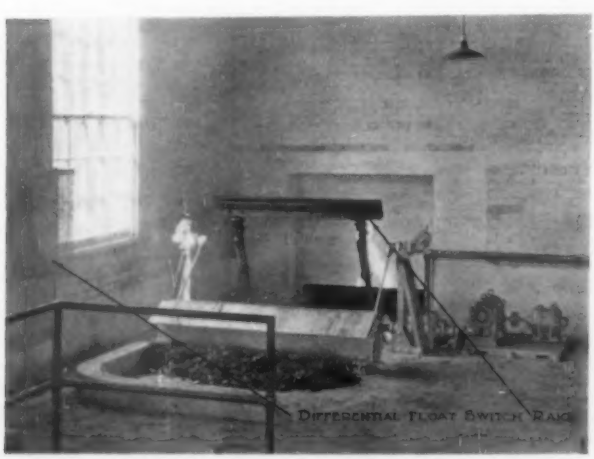
The bar screen is of the automatically controlled mechanically raked type. The screen, as first installed, consisted of ¼-inch bars at ¾-inch clear spacing. Early operations disclosed that the small openings intercepted too much organic matter, much of which might better pass on to the tanks. The screen openings were therefore enlarged by removing each alternate bar, so that the clear openings are now 1¾ inches. This is sufficient to protect the subsequent processes from clogging materials and still not to collect excessive amounts of screenings. The screenings now average approximately 1 cubic foot per million gallons.

Observation of periodic hand raking has disclosed its undesirable features. The Aurora screen was therefore specified to be equipped with automatic control, actuated by the difference in head upstream and downstream of the screen. When this differential, due to depositing of materials on the screen and resulting clogging, reaches a predetermined amount, about 2 inches, a switch is tripped and the raking mechanism makes one complete revolution, bringing the materials on the screen up to a platform, where they are discharged. The rake then stops automatically until the head on the screen builds up again, when the operation is repeated.

The advantages of automatic operation are illustrated graphically on the venturi meter chart. The venturi meter tube being located downstream from the screen, each raking of the screen permits the 2 inches of water ponded above the screen to pass through the meter at an increased rate, and it is thus recorded on the chart.

Reference to the chart shows that during some periods the screen was raked as frequently as five times per hour, whereas at other times the period between rakings exceeded four hours, thus clearly showing the advantages of an automatically controlled mechanically raked bar screen, which is clean all of the time, and which is raked at intervals corresponding with the necessity for raking, rather than a schedule of operation according to time.

The operation of this screen over the year in which it has been in service has been most satisfactory.




THE AUTOMATICALLY CONTROLLED MECHANICALLY RAKED BAR SCREEN

### Grit Chamber

In the operation of all grit chambers, the difficulty has been to secure a grit sufficiently free of organic matter to make it inoffensive. The mechanically cleaned grit chamber installed at Aurora accomplishes this result. The structure is 26 feet square, with a normal water depth of about 18 inches.

The mechanical equipment known as a Dorr detritor consists of a grit-collecting mechanism similar to a clarifier, except that the squeegees are set at such an angle as to deliver the grit to a hopper on the periphery rather than in the center of the tank. From this hopper the grit is dragged up an incline by a raking mechanism. The grit is washed by the sewage flow as it is pulled upward through it. The grit, being heavier, is carried up to the top of the incline and dropped into cars, while the lighter organic matter is washed out and returned to the sewage and thence continues on its passage through the plant.

The operation of the grit chamber of Aurora during

the past year has been very satisfactory. It has consistently delivered a grit sufficiently low in organic matter to make it inoffensive when dumped in the open. The grit during normal dry-weather flow periods has averaged approximately 70 per cent ash, based on three-hour ignition, and while observations during periods of storm flow are not so numerous, the ash content of the grit during four such periods averaged approximately 72 per cent.

### Settling Tanks

From the grit chamber, the sewage passes through the venturi meter and thence to four square settling tanks, each 50 feet square by 12 feet water depth. The period of detention at design capacity is three hours. A two-story conduit extends entirely across the length of the four tanks, the upper compartment carrying the inflowing sewage, and the lower compartment the tank effluent.

The settling tanks are equipped with traction clarifiers and grease skimmers. The practice is to operate the clarifying mechanism continuously, to pump sludge from the clarifiers to the digesters twice each shift and to skim the grease from the tanks once each shift.

The skimmings contain a large proportion of crankcase oil. Analysis of the skimmings shows a heating value of approximately 15,000 B.T.U. per pound. The skimmings to date have been disposed of by decantation to separate the grease from the water, followed by burial. Incineration is being studied. The tanks operate free from floating solids.

A superstructure was built over the clarifier tanks in order to facilitate winter operation. The sidewalls adjoining the digestors are of concrete; other walls are of common brick with stucco exterior. The roof is tar and gravel on full cell process creosoted wood sheathing supported on steel trusses. A monitor for ventilation and light extends practically the entire length of the building.

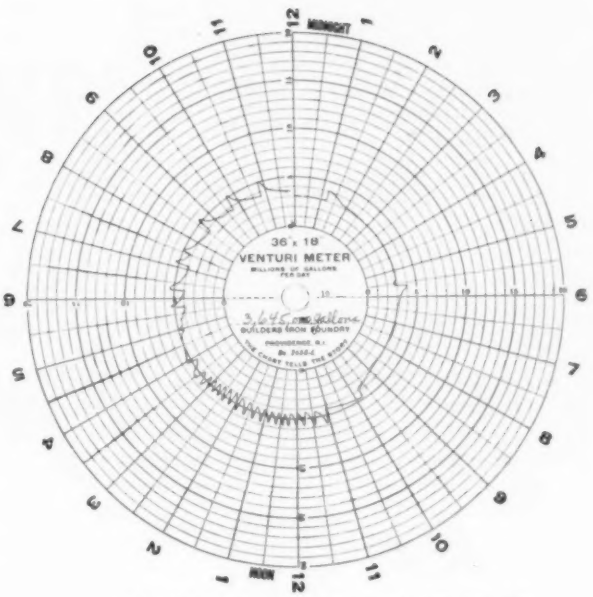
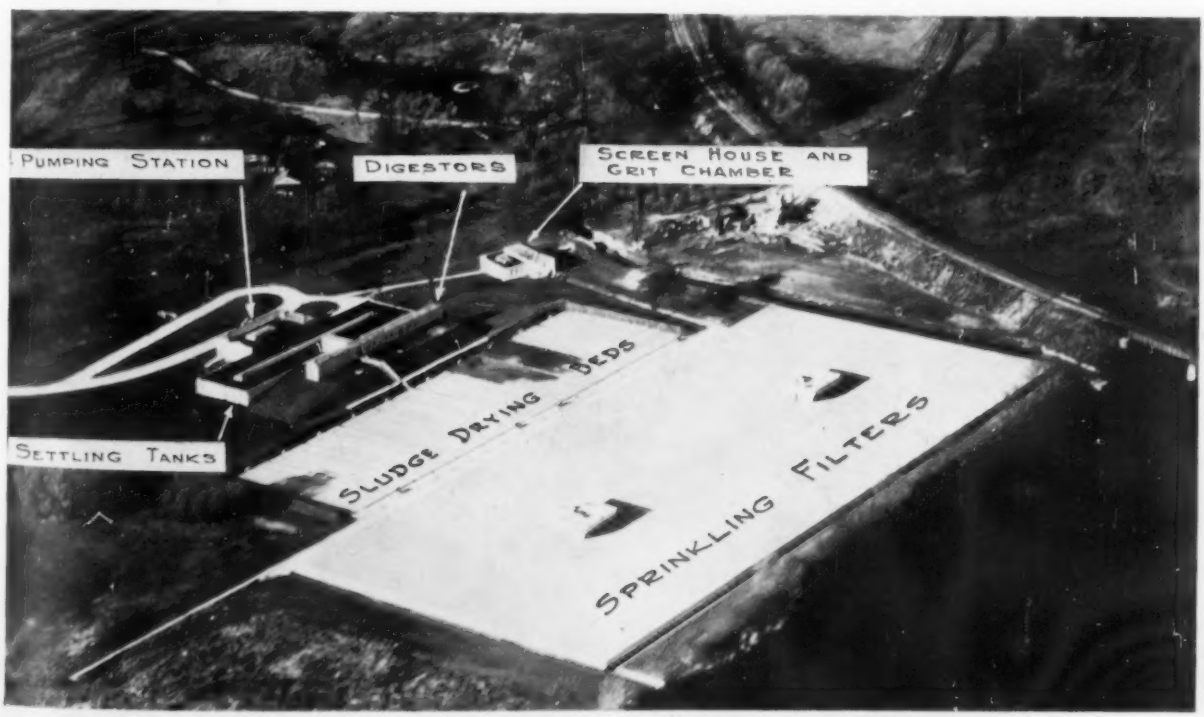



ILLUSTRATION OF THE ADVANTAGE OF AUTOMATIC CONTROL OVER PERIODIC MANUAL RAKING OF BAR SCREENS

The tank superstructure communicates directly with the pump room, office and laboratory on one side, and the digestor superstructure on the other.

### Sludge Digestion Tanks

Three sludge digestion tanks, each 50 feet square by 16 feet deep, having an aggregate capacity of 1⅞ cubic feet per capita, are provided. The sludge digestion tanks have concrete roofs, sloping toward a central dome for gas




THE COMPACT PLANT LAYOUT AND GROUPING OF ALL PRELIMINARY OPERATIONS UNDER ROOF

collection. The roof is supported from the digestor mechanism trusses. Each tank is provided with a stirring mechanism and with coils for heating the sludge. The sludge-stirring mechanism and gas domes are housed under a narrow superstructure, supported by the trusses. It extends the entire length of the tanks. This structure also connects with the clarifier tank superstructure. The entire tank system, pumping station, boiler room, office and garage are all under one roof, so that the operator can observe all these operations without inconvenience in any kind of weather.

The gas collected from the digestion process, amounting to about three-quarters of a cubic foot per capita per day on an average during the period of operations, passes to the boiler room, where it is burned under two hot water boilers. The hot water is circulated through the heating system of the buildings and through the pipe coils located on the walls of the three sludge digestion tanks. Gas in excess of the heating requirements is wasted in the stack. The temperature in the sludge digesters is normally carried at from 85 to 100 degrees.

The digestion of the sludge has been exceedingly good. The average analysis of all sludge drawn to the beds during the first year's operation has shown 62.1 per cent ash.

Sludge tank piping is so arranged that sludge can be drawn from any one of the four clarifiers or from the bottom of two of the digesters and discharged into the top of any one of the three digesters. The digesters can operate either in parallel or in series. To date, parallel operation has been used.

Each tank has an individual gas line and meter. Facilities for observing the effects of variables such as temperature, quantity and frequency of adding sludge, etc., upon the quantity and quality of gas are therefore available.

### Pumping Station, Office and Laboratory

From the clarifiers the settled sewage flows to a pump suction well, from which it is lifted to the filter dosing tanks by automatically float-controlled pumps of 6, 8 and 8 m.g.d. capacity respectively. The pumps, which handle settled sewage only, are of the closed impeller high-efficiency type.

The pumping station structure also serves as an administration and laboratory building. A shop, boiler room, switchboard, public and employees' toilets and garage are also provided.

### Sprinkling Filters

The sprinkling filters are of the standard type. The beds are 6 feet in depth. The stone in the bottom 5 feet ranges in size from 1½ inches to 2 inches. The top foot of stone varies from 1 inch to 1½ inches. Alternate proposals were taken on three types of floor drainage, one a ridge and trough of concrete, and the other two tile bottoms. The tile floor system cost approximately $9,000 per acre more than the concrete. The Metro tile bottom was installed.

The filters are subdivided into four beds, each of 0.9 acre area. Four single syphons rotate the flow, which is distributed to the four syphon chambers equally by adjustable crest weirs.

On account of the very adequate dilution usually available in the Fox River, no secondary sedimentation is provided.

INTERIOR OF THE SETTLING TANK SUPERSTRUCTURE, WITH THE GREASE SKIMMER OPERATING IN THE FOREGROUND

### Sand Drying Beds

Sludge drying beds of 48,000 square feet area, or ¾-square feet per capita, are provided. The beds are of the usual type construction with a narrow-gage track for removal of sludge to the dump.

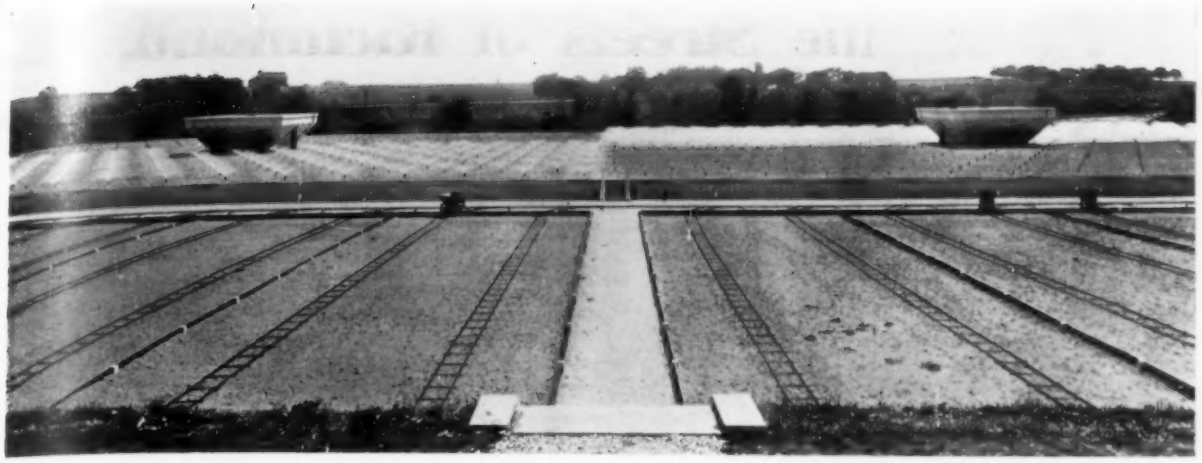
### Architectural Treatment

For many years there has been a growing appreciation among water-works engineers and officials of the desirability of improving the physical appearance of water-works structures and grounds. The design of sewage treatment works structures has, however, until recently lagged in this regard, possibly under the theory that sewage treatment is at best an unsavory process and one which would not benefit from improved surroundings. Experience to date with esthetically designed sewage treatment structures, attractive grounds, and operating conveniences, has demonstrated their worth in the added interest of the community served and the improved operations obtained.

In the ordinary American city, expenditures of from $30 to $50 per capita are made for the sewerage system, exclusive of sewage treatment. Nothing of this expenditure except the manhole covers is ordinarily visible to the eye. The construction of intercepting sewers and sewage treatment works usually adds another $15 to $25 per capita, and of this only a part of the expenditure for sewage treatment works is visible. A pleasing and correct architectural design involves little, if anything, additional in the way of cost. Good architectural design is based upon a pleasing presentation of those materials best adapted to the local situation and work to be done. It is believed that rarely will the difference in cost between a sewage treatment plant of inviting appearance and one less attractive exceed 1 per cent of the total expenditures of the community for sewerage and sewage treatment.

In sewage treatment works, the requirements for headroom in all structures are low. The type of architecture which readily lends itself to this requirement is the Spanish. A design was therefore developed which would be architecturally pleasing at low cost. The walls of all structures were built of rough common brick with the exterior plastered with three-coat stucco, approximately ¾-inch in total thickness. The principal visible roof surfaces, about 25 per cent of the total, are covered with Spanish tile.

The interior of the visitors' gallery of the pump room is finished with quarry tile floors and rock plaster walls. The office and lab-



PART OF THE SLUDGE DRYING BEDS AND THE SPRINKLING FILTERS AS VIEWED FROM THE DIGESTORS

oratory have linoleum floors on concrete painted plastered walls.

The grounds have been attractively landscaped, utilization being made of a natural spring, existing topographical features and trees. These have been supplemented with shrubbery, seeding and sodding of berms.

### General Observations

The plant started operation in September, 1929. It has accordingly passed through one severe winter. The advantage of the enclosures over the grit chamber and screen and over the settling tanks and digestor mechanism was amply demonstrated. At no time was there any inconvenience resulting from operation due to bad weather, other than the formation of ice on the stone sprinkling filters. With all except sprinkler operations under roof, night operations are under as close supervision as in daylight.

### Personnel

The Aurora Sewage Treatment Works were designed by Alvord, Burdick & Howson, who were also associated on general supervision of construction. The detailed supervision of construction was under the direction of the Engineering Service Co., of Aurora, through W. E. Deuchler, District Engineer. Victor A. Matteson, of Chicago, was architect.

The automatic screen, mechanical grit chamber equipment, clarifier and digestion equipment were furnished and installed by the Dorr Company. The pumping equipment was furnished and installed by the American Well Works, of Aurora.

The total cost of the sewage treatment plant was approximately $650,000. Including the interceptors, the entire cost was approximately $1,250,000.

# Another Bad Year of Motor-Vehicle Deaths

THERE were approximately 32,500 deaths in 1930 from accidents involving motor vehicles, according to an estimate announced last month by the National Safety Council. This compares with 31,215 such deaths in 1929 as computed from final returns of the United States Census Bureau. These figures include motorcycle cases.

In commenting on the 1930 figures, Sidney J. Williams, Director of the Public Safety Division of the National Safety Council, writes: "The estimate was based primarily on reports from health and motor-vehicle departments in 34 states, covering more than three-fourths of our population. These reports showed an increase of approximately 4 per cent over 1929. States predominantly rural had an increase of about 14 per cent, those with urban and rural populations approximately equal an increase of 7 per cent, and those predominantly urban little or no change. In substantiation of this difference, current reports to the National Safety Council as well as those published by the United States Census Bureau have shown increases of only 1 or 2 per cent for motor-vehicle deaths in city accidents.

"If the estimated 4 per cent increase proves correct it will be the lowest percentage increase in history. The numerical increase of 1,300 is also comparatively low. But this is explained only too easily by the fact that motor-vehicle registration showed almost no increase. The present estimate is that 1930 registration was less than 1 per cent above that of 1929. Thus the accident increase was, once more, greater than either the vehicle or the population increase."

Further details from the report follow:

Motor-vehicle deaths increased 48.1 per cent in Iowa during 1930. In decided contrast, Rhode Island enjoyed a reduction of 20.1 per cent during the year, while Washington, D. C., cut its motor-vehicle deaths 28 per cent.

Ten states with strong drivers' license laws showed an average decrease of 1.5 per cent. These states are New Hampshire, Rhode Island, California, Connecticut, Maryland, Massachusetts, New Jersey, New York, Pennsylvania and Vermont. In decided contrast, the states without standard drivers' license laws show an increase of 8.3 per cent.

If the entire country had done as well as these ten license law states during 1930, 1,700 lives would have been saved last year and the nation would have enjoyed a substantial reduction in its annual motor-vehicle death toll.

The increase in 1929 was 12 per cent. In 1928 it was 8 per cent over the previous year. Increases since 1906, when the first motor-vehicle records were kept, very often ran from 25 to 50 per cent. It is interesting to note that there were only 416 auto casualties in 1906.

Railway grade-crossing deaths showed big reduction in 1930. Pedestrians also fared a little better in 1930 than during the previous year, when fully 50 per cent of the victims were struck while on foot.

# Paving the Streets of Richmond, Va., with Brick

*Careful Work Involves Compacted, Well-drained Subgrade, Concrete Base, Sand Cushion, Skillfully Laid Brick and Asphalt Filler*

*By* A. MASON HARRIS
Chief, Bureau of Streets

CAR-TRACK CONSTRUCTION FOR BRICK PAVING ON A 6-INCH CONCRETE BASE

LAYING A 6-INCH CONCRETE BASE, 1:3:6 MIX, FOR VITRIFIED BRICK PAVING IN RICHMOND, VA.

NOT so many years ago, in paving a street the main consideration was to keep the slow-moving horse-drawn traffic out of the mud, and although some attention was given to smoothness, one or two bumps more or less in a day's journey made very little difference, as the speed attained in those days was not excessive. With that class of traffic few city streets were hard-surfaced, except those that were paved with granite block on a sand cushion, and the great majority of the roadbeds were either gravel or macadam.

With the advent of the motor vehicle, the street engineer's problem became more complicated. The traffic would not use the streets that would stand the traffic, because they were rough, and those that the traffic would use were not substantial enough to stand the traffic, as they were soon made rough from the suction caused by rubber tires. It was then necessary to cast about for materials that would make not only a smooth street, but a street durable and economical.

In riding over a street the average person gives very little thought, if any, to the type of pavement over which he is driving as long as it is smooth, and it takes a sudden jar from a service cut or a place that needs maintenance to make one realize that there is a pavement on the street at all.

The kind and amount of traffic as well as the topography are some of the main considerations in determining with what a street should be paved. While some pavements are well suited to one class of traffic, they would be inadequate in another location.

With the care given in the selection of the material, supervision in manufacture and the rigid test given vitrified paving brick, it would seem that this type of pavement—properly constructed on a concrete base with an asphalt filler—is suitable for heavy-traffic streets.

## Inspection

A close inspection of every operation of any pavement during construction is essential for the best results. Inspection does not mean just some one on the project to stand around and watch the work go on, without any particular training; but one who has been trained, who can direct the work, help the contractor, give the necessary levels under the direction of the engineer, and who knows when the construction is being carried out according to the specifications.

Where there are a good many streets to be paved under one contract and there are a number of operations—such as grading, curbing and guttering, base and wearing surface—we believe the best results are secured by an inspector on each operation. This of course cannot always be carried out; however, the closer the inspection, the better the pavement.

No one inspector on a paving project can properly supervise all the various operations. Necessarily, it is well to have some of the inspectors trained for particular operations. This applies principally to wearing surfaces.

## Subgrade

The place to begin any pavement is at the subgrade; drain it if necessary, find out by rolling where the soft spots, utility and sewer ditches are, and if they cannot be compacted sufficiently, mark them, and reinforce the base over them. However, it is better to roll and re-roll until the ditch cannot be found in the subgrade.

Even after the subgrade has been fine graded and is ready for the concrete base, the weight of the mixer and trucks with batches being hauled to the mixer will cut up the subgrade slightly, which makes it necessary to reshape and ram it between the end of the boom and the mixer, before the concrete is poured.

To make certain that the subgrade is put to the proper crown and grade before pouring the base, we drive iron

pins in the subgrade at the crown, half, quarter and any intermediate points needed transversely across the street, and longitudinally ten feet apart. The tops of the pins are put to the grade of the finished paving. The inspector then measures down from the top of the pin to check his subgrade, and also marks on the pins where the base should be poured. He makes his final check after pouring by measuring down from the tops of the pins for his base thickness. In this way there is very little likelihood of not getting the finished pavement to the proper crown and grade, and of not getting the proper depth of base. The subgrade and top of base are sure to be parallel to the finished surface of the pavement.

### Concrete Base

What depth of base is to be used, and whether reinforced or not, depends on what experience has been shown to be necessary for a particular city. In any event the essential point to watch—so far as the construction of the base is concerned—is to see that the proper proportions of fine and coarse aggregate are put into each batch, which can best be done if a batching plant is specified.

Require a water-measuring device on the mixer, as well as a timing mechanism, to insure the proper mixing of the cement and aggregate before the concrete is placed on the subgrade.

LAYING BRICK ON ROLLED SAND CUSHION 1 INCH THICK ON A 6-INCH CONCRETE BASE. POURING THE ASPHALT FILLER AND APPLYING THE COVER OF CHIPS

The concrete mix in a base is generally designated as a certain proportion by volume of cement, sand and coarse aggregate. Sometimes a richer base improperly proportioned and mixed will not develop as much strength as a leaner base. What we really desire is a base of a certain strength at a certain time, and this can be obtained and carried on from day to day with very little variation.

Bases in Richmond on brick work are 6 inches thick plain concrete, 4 bags of cement to the cubic yard, or approximately 1:3:6 mix, with a slump of from 1 to 1½ inches. The city furnishes all cement for the original construction.

Boom and bucket mixers and aggregate batchers are required on all of our base construction. After the concrete is mixed for a minute and a half, it is dumped on the subgrade from the bucket and is spread to the proper grade by shovels or hoes.

After the pouring, it is required that the concrete be tamped with what is locally known as a "White Eye." This is an oak beam about 12 feet long with handles at each end. This tamp is worked by two men lifting and dropping each end alternately and working across the base with the length of the White Eye parallel to the center line. The tamping eliminates small uneven places in the base and also brings enough mortar to the surface for final finishing with long-handled floats.

In our work, test beams 5 x 5 x 30 inches long are taken from the base each day the mixer runs, and these are cured in the laboratory. When these beams are broken and develop a minimum tensile strength of 300 pounds—which is approximately 1,400 pounds compression—the laying of the brick is allowed.

### Curing Base

Various methods are used for curing the base. In cities where water is accessible, curing by sprinkling is about the most satisfactory. The sprinkling should begin just as soon as the concrete has set sufficiently not to be damaged by walking on it.

Our special provisions require that sprinkling begin at 7:00 o'clock A. M. and continue until 5:30 o'clock P. M. for seven consecutive days, and that one man with sufficient hose shall be assigned to every thousand square yards of base laid.

### Sand Cushion

The contour of any pavement is determined primarily by the care with which the base is laid to the given grade and crown; however, with a sand cushion of not more than one inch, all irregularities can be overcome. The sand used for the bedding should be fairly clean and not too fine, as we have found that a very fine sand has a tendency to work up in the joints when rolled. There is no objection to a small amount of clay or loam.

The sand is first dumped on the base with trucks and then spread with shovels to a depth a little greater than the finished bedding. After this is done, strips the depth of the finished bedding are laid on the base at right angles to the street and about 10 feet apart, and the sand then screeded and rolled with a hand roller 24 inches wide weighing about 200 pounds. It is often necessary, in order to get the proper compression, to dampen the sand. The finished bedding should be kept ahead of the bricklaying about 50 feet.

### Laying Brick

A vitrified brick pavement is one of the simplest to con-

APPLYING THE ASPHALT JOINT FILLER AND CHIP COVER ON BRICK PAVING IN RICHMOND

struct. Skilled labor is not required, as a common laborer in a short while becomes an expert; a good foreman, however is necessary.

To be certain that the bricks break joint properly, it is well to have a laborer at the curb to start the rows alternately with a whole and a half brick.

Where there are car tracks, attention should be given to the cutting of the brick to see that they fit properly along the rail, the smooth end of the brick being placed next to the rail, and the rails webbed with 1:3 cement mortar in advance of the paving.

About every four courses the rows should be straightened by placing a 4 x 4 timber 3 feet long against the brick and hitting them lightly with a sledge to line them up. Before rolling the brick the inspector should go over those laid and cull any broken or defective brick; after this is done and the section approved for rolling, the surface should be swept clean of all broken brick.

A COMPLETED BRICK PAVEMENT FIVE YEARS OLD ON A 6-INCH CONCRETE BASE WITH 1-INCH SAND CUSHION, ASPHALT FILLER AND A COVERING OF CHIPS

## Rolling

A tandem roller of from three to five tons is used to give the necessary compression. The rolling should begin at the curb line and continue backward and forward until the center is reached, when the rolling should be started again at the other curb.

After the rolling another inspection should be made for broken brick, and then a test should be made with a 6-foot straight edge for any irregularities.

## Asphalt Filler

Much has been said and written about bituminous fillers for brick streets; this is more of a chemical question than an engineering problem; however, I am sure the engineers will be more than glad when our chemical friends develop a filler not too brittle, not too soft, and that will not stay on the surface of the brick but will fill the joints. Until this ideal filler has been developed it is necessary to apply our present fillers to the best advantage.

Essentially, the bituminous filler is used to waterproof the pavement, protect the edges of the brick from wear, and allow for contraction and expansion. It is not a top dressing, and practically all of the bitumen left on the top of the brick is so much waste.

There are several methods of applying the filler. It has been our experience that the best results have been obtained when the asphalt was poured on the brick from a wheelbarrow and vigorously squeegeed by the back of a rake on which was attached a piece of rubber belting.

The filler should be heated in kettles of not less than 300 gallons capacity and applied at a temperature of between 350 degrees and 400 degrees F. While the asphalt filler is still hot the covering should be applied.

## Covering Material

The most satisfactory covering material for our brick streets has given us some concern.

Since the brick street is immediately opened to traffic, it is desirable as far as possible to prevent the covering material from being whipped off the brick by rubber-tired vehicles. Sand, granite and limestone chips have been tried with varying degrees of success. We have fianlly adopted limestone chips as our covering material.

The specifications for these chips call for 95-100 per cent passing a ¼-inch screen and permit from 0-7 per cent to pass a No. 10 sieve. Chips are spread at a minimum temperature of 250 degrees F. and then rolled.

The utility and appearance of a pavement are naturally marred by cracks or cuts, caused either by temperature, failures, or replacement of underground services. With the present-day type of vitrified brick on a sand cushion with asphalt filler, base cracks are not evident, as the brick seem to bridge these cracks, and cuts are repaired without disfiguring the pavement and with the same brick, except, of course, those that have been actually broken by the cutting of the pavement.

Vitrified brick pavements have proved in Richmond to be economical in first cost, easy to construct, easy to replace when service cuts are necessary, durable, smooth, and a satisfactory paving for heavy traffic, with maintenance negligible.

ACKNOWLEDGMENT.—From a paper read before the American Society of Municipal Engineers.

# Westport Realizes Big Waterfront Project Designed to Preserve Its Community Beach

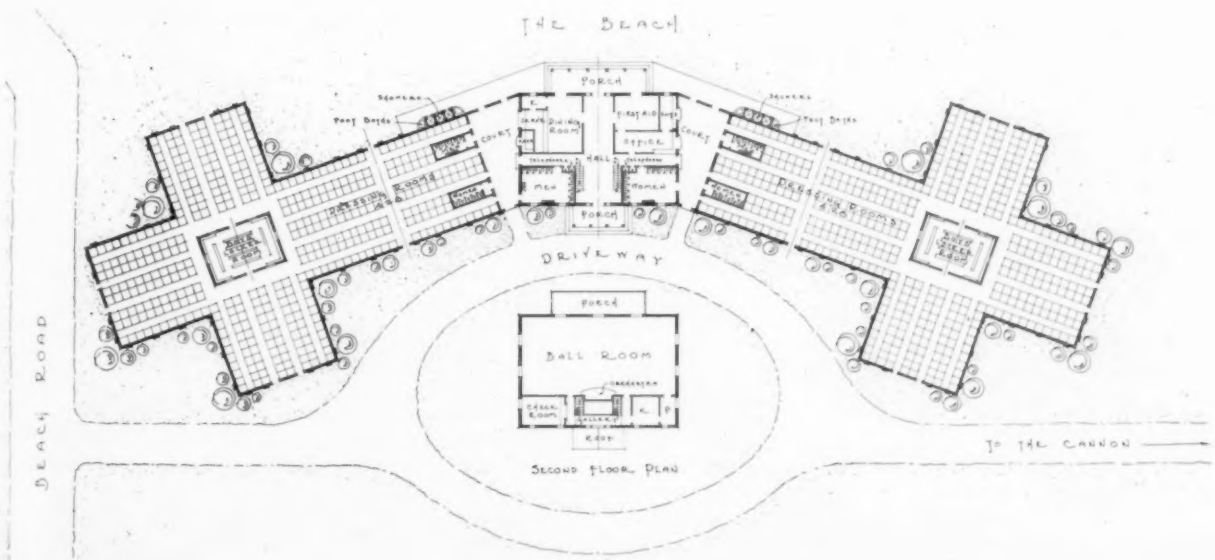
***$250,000 Land and Building Program Is Being Carried Out as First Development Under the Town Planning Commission***

A SUBSTANTIAL waterfront improvement project recently undertaken under direction of the Town Planning Commission of Westport, Conn., involves a capital outlay of a quarter-million dollars. It includes ahe re-design of Compo Beach, Westport's 30-acre waterfront playground, at a cost of $150,000, a work now substantially completed; and the construction of a bathing pavilion group ultimately to cost $100,000, and to provide nearly a thousand bathhouses besides the central building. One unit of this group was completed and put into operation in advance of the 1930 season, at a cost of about $50,000. This will be used for the present in conjunction with the old buildings.

The beach re-design plan, the engineer's preliminary drawing of which is reproduced, has materially changed a large stretch of shore line. A rock promontory has been leveled down at one point. There is water where before there was land; and land where before there was water. The main feature of the engineering work was an extensive fill carried on in conjunction with extensive dredging operations. The result is a large community parking area, with a system of protective jetties along the new shore line; and, adjacent to the new land, a yacht basin large enough for anchorage of deep-water vessels. A channel has been cut connecting this yacht basin with the navigable channel at the junction of the Saugatuck River and Long Island Sound.

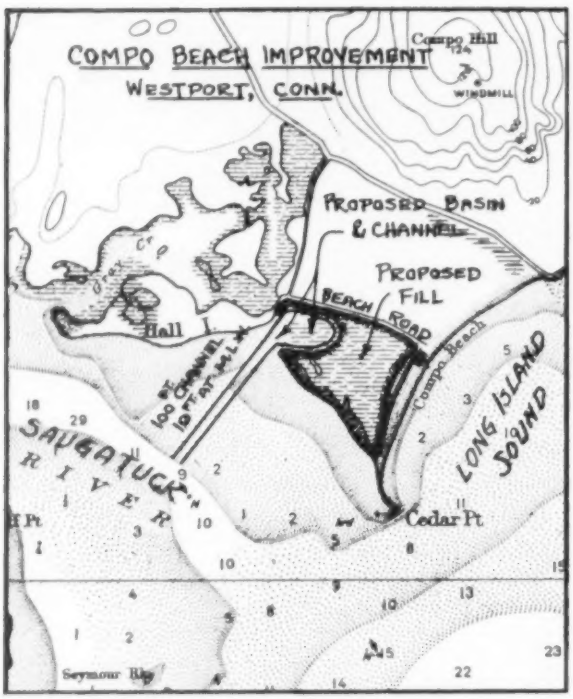
Compo Beach has always been publicly owned, and operated under town control as a recreation center. In general, it is not a source of revenue, but is self-supporting.

The improvement is expected to provide facilities for the present and future needs of the community, which is at once that of a New England township and a residential center 50 miles from New York City. It also places in the hands of the town more adequate control of beach use, and facilitates beach operation according to standards




ARCHITECT'S PLAN OF THE BATHING PAVILION GROUP

The layout of the second floor of the main building is shown in the drive-encircled oval, on which the structure will front




ENGINEERING RE-DESIGN PLAN
Proposals of which are now practically completed

representative of the Westport people. This control is exercised through limiting the use of the parking area within the development to cars with Westport licenses. There is space for a possible 1,500 cars and an out-of-town parking area which will accommodate about 300 visitors' automobiles. Only a fraction of this is needed at present. Meantime, the whole area is being spot planted; that is, landscaped "oases" are being developed here and there over it to remove the barren effect of the new-made land.

The yacht basin has a capacity of 100 boats. During the 1930 season, it was operated directly by the town, and a mooring charge of $1 per foot for the season was made for all craft. It is anticipated that by another season a Community Yacht Club will be organized and will take over control on a nominal rental basis.

This beach improvement is the first feature of the Westport town plan to be carried out. "It was a very large undertaking," says W. Bradley Kellogg, Secretary of the Town Planning Commission, "and in submitting it to the people for approval, we had to be able to place it before them with definite facts and figures. Therefore, we employed a Norwalk representative of a large engineering firm to make the preliminary studies and specifications. This involved a cost of $300, which we considered an expense well worth while because it ultimately resulted in a large saving to the town."

### The Building Plan

The bathing pavilion group, designed by Philip S. Graham, a Westport architect, incorporates a number of unique features, both in planning and construction. One of the most striking of these is the brick construction used for the surrounding walls and to be used for the walls of the central building which is still to be erected. Common brick is used in skintled effect, which means that although they are run in courses which are level horizontally, none of them come to a flush surface, but are laid irregularly and according to no particular formula, some projecting at one end and being recessed at the other. This gives a soft appearance to the building, as the minor projections cast small shadows and take away from the hard conventional surface of the ordinary brick job. "The method," Mr. Graham has found, "enables the average bricklayers to lay three times as many bricks per day as if they were endeavoring to do a perfect job, and is therefore actually cheaper than the stupid-looking factory-wall brickwork."

Another striking departure of the design is the form of the pavilion group, shown in the plan reproduced. Of this, the architect gives the following account:

"This shape was arrived at with two objects in view. The first was to present as many "dead ends" as possible, so that future bathhouses might be added to the project in as many directions as possible, without spoiling the looks of the group. You will notice on this plan that there are six different directions in which to extend the groups of dressing-rooms. The second reason for the cross shape is that the distance from the farthest bathhouse to the main pavilion is made shorter than if the wings were continued out away from the building in a straight line. The reasons for the wings coming from the main building at an angle, forming a crescent, are four. First, it takes from the factory-like or stiff appearance of such a large group, to have as many angles as possible. Second, it makes a pleasant entrance circle or court. Third, it makes it possible to add to the ends of the crosses nearest the beach. Fourth, it makes a triangular-shaped court between the pavilion and one of the wings of bathhouses, which is an advantage, because this court should have a wider entrance on the beach side than on the land side, as that entrance will be used not only by people coming to and from the beach, but by bathers securing refreshments, towels, etc."

Numerous ingenious uses are made in the building group of new materials, or of old materials in new ways. For the roofs, an antique-effect shingle tile is used, which is no tile at all but a new material believed to be used here for the first time on municipal work. This is cinder concrete, coated over with pure cement, colored. It is more waterproof and far cheaper than real tile, and when manufactured to carefully devised specifications, is very effective.

The construction of the bathhouses is considered one of the most interesting points of the design and has already been widely commented upon. The walls of these are of asbestos board, and the roofs of corrugated asbestos sheeting. In working out the problem, the architect invited representatives of the outstanding manufacturers of materials appropriate to this use to come to Westport and confer with him as to the most efficient and practical means of building the first unit, realizing that any unwise choice of material or unwarranted expense here, when multiplied many hundreds of times as it would be in the job, was of importance. The standard, trade-marked asbestos materials finally chosen are new to this use.

Factors influencing the choice were, first, fire resistance, second, economy, and third, durability. The cost, aside from ornamental brickwork used for the exterior, and from the concrete slab on which the structures were placed, was approximately $46 per bathhouse, or about 15 per cent more than frame construction. Metal construction

is not feasible for such use, because of the heat, and masonry construction costs double or triple the cost of frame; hence asbestos in some form has begun to be widely used in modern bathhouse construction. It never needs to be painted or coated with any material to protect it, as it becomes harder and stronger from exposure.

Westport is believed to be the pioneer among towns of its size in undertaking a recreation project of this character upon so great a scale. The 1930 population is 6073, a large part of which is spread out over the country. It is carrying out first the feature of the town plan familiarly thought of as coming much later, if not last. Sound and important considerations have influenced this action. Chief among them is the preservation of the town's character as a New England community of picturesqueness and charm, favored by artists and writers because of its quiet and opportunities for natural outdoor life. In carrying out its own permanent waterfront plan, which is one of great dignity and beauty, and is in line with sound town planning practice, the town is in effect discouraging the development in its vicinity of a spectacular commercial waterside amusement center.

# Hospital Rates for Public Charges in New York State Cities

*By* CLARENCE E. FORD
**Assistant Commissioner,
State Department of Social Welfare,
Albany**

THE cities of New York State are required to provide hospital care for dependent residents needing such care. This treatment may be given in public hospitals or in private hospitals approved by the State Department of Social Welfare, at a rate agreed upon between the hospital management and the public officials.

The question of what constitutes a reasonable rate of payment for public charges has been vigorously discussed in many cities. Hospitals usually maintain that this rate should approximate the average per capita daily cost of maintenance, which, for private hospitals reporting to the State Department of Social Welfare, was in 1928 $5.60 and is now probably about $6.00 a day. City governments, however, generally insist that any such rate is unreasonable and far more than their cities can afford to pay. That the question is an important one is shown by the fact that during 1928 a total of $3,380,164, nearly all of it from cities, was paid for the care of 54,021 public charges in private hospitals in this state.

In its inspection of hospitals, the State Department of Social Welfare inquires as to the rates paid for the care of public charges in these hospitals, and a record is made of the information obtained. An examination of these reports shows that of the sixty cities in the state, all but six have one or more general hospitals within their borders and these are close to other cities having such hospitals. Nine cities care for their public charges in hospitals maintained by the respective municipalities. The remaining forty-five cities utilize to a greater or less extent the facilities of local private hospitals, though New York City maintains a number of general and special hospitals and in other cities there are hospitals for special groups such as patients having contagious diseases. In three cities, in place of the per capita daily rate, an allowance of a definite annual sum is made under charter provisions. The per capita daily rates paid by the other forty-two cities, with the number of cities paying these rates, are as follows:

| Per Capita Daily Rate | No. of Cities |
|---|---|
| $2.00-$2.25 | 6 |
| 2.50 | 3 |
| 3.00 | 14 |
| 3.50 | 4 |
| 4.00 | 4 |
| 4.50 | 8 |
| 5.00 | 3 |

The average rate for all these cities is $3.41 a day.

In the nine cities caring for their public charges entirely in their own municipal hospitals, the average per capita cost of maintaining patients in those hospitals was, in 1928, $5.16 a day, which is more than the highest rate paid by any city for public charges in a private hospital.

It is doubtful whether the establishment of a municipal hospital should ever be urged on the ground of economy as contrasted with the care of city charges in private hospitals. In the largest cities, however, there are considerable numbers of patients suffering from contagious and infectious diseases or other disabilities which cause them to be rejected by private hospitals. For these and chronic cases, a suitable hospital should be provided by the city or by the county in which the city is located. Also, in the smaller cities private benevolence is frequently insufficient to maintain a hospital, so that a municipal institution is necessary if there is to be any hospital at all in the community. Probably the most satisfactory arrangement is for the county to provide the hospital for special groups, leaving to the cities the care of their acute cases in private hospitals. Such a plan is used in Westchester County and seems to work well.

### Conclusions

**1. Care of city cases in private hospitals is less expensive for the city than the maintenance for a municipal hospital. However, local conditions sometimes justify the expense of maintaining a public hospital in a given city.**

**2. At the present time a rate of $4.50 a day for each public charge in a private hospital seems fair both to the hospital and to the municipality.**

**3. A satisfactory arrangement appears to be the maintenance by the county of a hospital for chronic and special cases, including those from the cities, and at the same time commitment by the county and cities of acute cases to private hospitals in their respective localities.**

# State-wide Broadcasting System Promotes Crime Control

BROADCASTING FROM WRDS

*By* **OSCAR G. OLANDER**
**Commissioner of Police,**
**Department of Public Safety,**
**Lansing, Mich.**

A MICHIGAN STATE POLICE PATROL DETACHMENT
The radio receiver sets are not visible when installed in the patrol "cruisers"

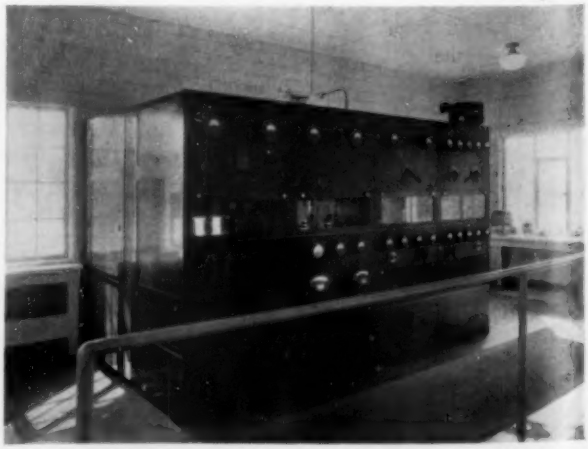
AN act was passed by the Legislature of 1929 authorizing the establishment of a State Police broadcasting system in Michigan. This act provides for the furnishing of radio receivers to each sheriff in the state and each State Police detachment. Negotiations were immediately started with the Federal Radio Commission for a license, and after presenting evidence to show the need of such a station for the efficient combating of crime, the Commission issued the license for a station with call letters WRDS.

Bids were secured from several leading manufacturers of radio transmitters, and after a careful investigation of these bids a 5-kw. transmitter, manufactured by the DeForest Radio Co., of Passaic, N. J., was selected. This transmitter was installed in an especially constructed building at the Michigan State Police Headquarters at East Lansing and has been in regular operation since October 1, 1930.

The total cost of installation was $55,000. A receiver manufactured by the Sparks-Withington Co., of Jackson, Mich., built especially for police use, was selected, after experiments had been made with those of several manufacturers.

The Department has forty-five of these machines installed in police cars, besides the receivers in the detachments. Installation of these receivers is going on rapidly, and it is expected that the sheriffs' departments requesting the receivers will soon be supplied. The system is proving so successful that some of the sheriffs' departments are asking that radio-equipped cruisers be furnished them by their counties.

In evidence of the need of a state-wide police broadcasting system may be cited numerous recent instances of crime and escape, among them the robberies of the Peoples' Savings Bank, of Cadillac, the Wolverine State



THE RADIO TRANSMITTER

Savings Bank, and the Albion State Bank, of Albion, in October, 1929, November, 1929, and April, 1930, respectively. Substantial sums of money were stolen in each case; in Cadillac, about $35,000 in cash, and $150,000 in securities, many of which were negotiable. In each case a general telephone alarm was broadcast, but the bandits are all still at large.

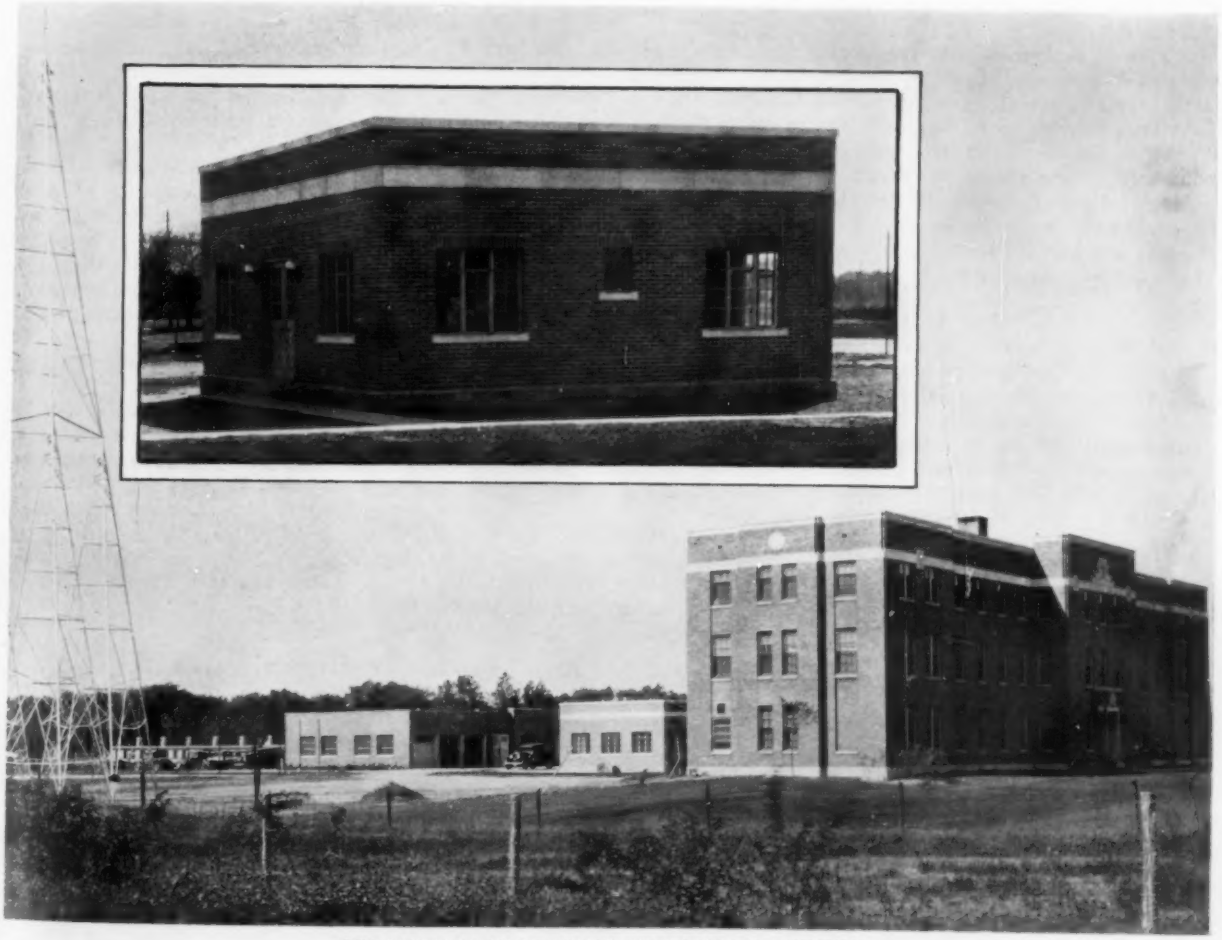
### Desperate Gunmen

On December 14, 1929, in St. Joseph, when Officer Joseph Skelly stopped a motorist who had previously been involved in a minor traffic accident, and requested that he drive to the county jail, the motorist shot Officer Skelly, killing him instantly. Later on, it developed that the murderer was Fred Burke, who had lived in the community as Fred Dane. After the murder Burke traveled south of Benton Harbor to Stevenson, and after leaving Stevenson practically retraced his steps and going through the outskirts of Benton Harbor traveled east to Coloma. Burke is the most wanted man in the United States, and the police of Chicago hold a warrant for him for the St. Valentine's massacre. In the residence in Benton Harbor where Burke had taken refuge were found machine guns, rifles, etc., and also $100,000 worth of bonds which were stolen from the Jeffersonville, Wis., bank. At the present time, although a reward of $90,000 is offered for this man, he has not been apprehended.

Numerous instances might be cited from our records of the past year or two to show how troopers have been wounded in gunfight while attempting to seize suspects. The case of Trooper L. J. Meehan of the Department is typical. He some time ago stopped three men in a car to inspect it. They opened fire, and he was shot in the leg. Two of the men were wounded and captured, but the third escaped. In this, as in other cases which might be cited, the men would not have escaped if our radio station had been in operation.

MODEL 55 RECEIVING SET

This is used in sheriffs' offices and in sheriff and police departments. Like the somewhat similarly constructed Model 50 used in police cars, it is made to order for the department



THE MICHIGAN STATE POLICE HEADQUARTERS BUILDING

Directly at the rear of it is the building especially constructed for the radio transmitter illustrated on the opposite page. The radio transmission building is also shown in the inset above

Our experience with crimes broadcast over WRDS is in marked contrast. Results will be even more gratifying when installation of receivers has been completed. A few instances might be cited from the Department records as typical of frequent experiences: Three stolen cars were recovered by radio on October 8, 1930. One message was broadcast to State Police Car 40, patrolling somewhere east of Jackson, ordering arrest of two men in a car stolen at Ann Arbor. The thieves were arrested on U. S. route No. 12 twenty minutes later.

On October 13, two men held up the Merchants Bank of Battle Creek. At 2:30 this information was broadcast and eleven radio-equipped cars were dispatched to cover the routes that the bandits might take. At 4:43 P. M. information of the shooting of Trooper John Burke by the bandits was broadcast. By radio it was possible immediately to start focusing the eleven cars on the vicinity where this officer was killed. At 6:50 the crew of car No. 24 reported the capture of these bandits and the recovery of the money taken from the bank and of a stolen car near Howe, Ind. Thomas Martin and James Gallagher were returned to Centerville, where they confessed to robbery and to the killing of Trooper John Burke. These men later pleaded guilty and were sentenced to life imprisonment at the Michigan State Prison.

On December 16, three men held up a gas station in Kalamazoo. Information was broadcast at 12:00 noon, and six minutes later the bandits were captured by the crew of car No. 37 working out of the Paw Paw police station.

Our experience thus far has served to confirm the conviction that a radio division is indispensable to a police department that is to function effectively in the protection of the people against crime.

# A Study Tour of European Housing and Town Planning

AMERICANS are becoming increasingly interested in European housing and town planning and increasingly aware that a peaceful social revolution is being accomplished in a number of countries by wholesale re-housing of the lower income groups. Whether we approve or disapprove of municipal slum clearance and municipal housing, we want to see them in action. We want to compare them with cooperative housing and with the housing produced by private business enterprise. We want to visit the English garden cities to see where they differ from our own.

A number of Americans are planning to attend the International Housing and Town Planning Congresses in Berlin during the first week in June. A party is being organized to meet the needs of those who would like to devote the fortnight preceding the Berlin meetings to a study tour of English and Dutch housing and the fortnight following the Congresses to a similar tour of German and French housing, with a probable stop either at Prague or Brussels. A special feature of the tour will be the personal contacts arranged with leaders of the housing and planning movements in the various countries visited.

The tour will be led by Dr. Edith Elmer Wood, author of several books on European and American housing. The party will sail from New York on May 9 and is due to reach New York again June 29. Special adjustments can be made for those who are unable to leave so early, for those who must reach home sooner, or for those who wish to stay in Europe longer. Inquiries may be addressed to World Acquaintance Travel, Inc., 29 West 49th Street, New York, or to Dr. Wood at the Hotel Judson, Washington Square, New York.

### The Berlin Congresses and Exhibition

As previously mentioned in THE AMERICAN CITY, a notable exposition, the International Town Planning and Housing Exhibition, is to be held in Berlin this year. It will be open from May 9 to August 9, concurrently with the German Building Exhibition. Among the international congresses to be held during the exposition are those of the International Federation for Housing and Town Planning and the International Housing Association, both of which are to be in session June 1-5.

At the Housing and Town Planning Congress the principal subjects to be discussed will be "The Traffic Problem in Relation to Town and Regional Planning" and "The Abolition of Slums." For the full program, requests should be addressed to H. Chapman, Organizing Secretary, 25, Bedford Row, London, W. C. 1; or to either Flavel Shurtleff, Secretary, National Conference on City Planning, 130 East 22d Street, New York, or Lawrence Veiller, Secretary, National Housing Association, 105 East 22d Street, New York.

One of the controversial subjects to be considered at the International Housing Congress is phrased as follows: "Whether and to what extent under present conditions private building enterprise on a profit-producing basis is able without the support of public means to provide the necessary dwelling accommodation for the masses of the population in a way which will satisfactorily fulfill all economical, social, hygienic and other modern requirements." Among the other topics are the building of small dwellings with reasonable rents, and housing inspection.

The detailed program of the Housing Congress and information regarding the study tours which are to follow it, are obtainable from Dr. H. Kampffmeyer, General Secretary, International Housing Association, Hansa-Alee 27, Frankfurt am Main, Germany; or from the American committee members, John Ihlder, Director, Pittsburgh Housing Association, Granite Building, Pittsburgh, Pa., or James Ford, Executive Director, Better Homes in America, 1653 Pennsylvania Avenue, Washington, D. C.

# Public Administration Clearing House Formally Organized with Louis Brownlow as Director

THE Public Administration Clearing House was formally organized by the election of former Governor Frank O. Lowden of Illinois as Chairman, former Governor Harry F. Byrd of Virginia as Vice-Chairman, and Richard S. Childs of New York, President of the National Municipal League, as Treasurer. Other members of the Board are Newton D. Baker, former Secretary of War, Chester H. Rowell, of California, and Louis Brownlow, of Radburn, N. J. The seventh member of the Board of Trustees, who will be a Canadian, is yet to be chosen. Chicago was selected as the headquarters, which will be formally established about March 1.

Louis Brownlow was chosen as Director of the Clearing House. Mr. Brownlow, who for the last three years has been engaged in helping to build the model city of Radburn, has devoted many years to municipal administration. He was for six years a Commissioner of the District of Columbia, for three years City Manager of Petersburg, Va., and three years City Manager of Knoxville, Tenn. He is a former President of the International City Managers' Association and is now Vice-President of the National Municipal League.

The Public Administration Clearing House has received a grant of $50,000 a year for a period of ten years from the Spelman Fund of New York toward the development of its program of work.

# With New Source of Water Supply, Town Buys Its Distribution System

*By* F. M .VAN VOORHEES and G. M. HUTTENLOCH
**Municipal Research Assistant and General Superintendent, Bureau of Water Supply, Town of Montclair, N. J.**

THE first of eight municipal partners to use as its entire water supply the new New Jersey Wanaque Water Development, Montclair, also has ended its five-year effort to obtain control of its distribution system and source of supply. The Wanaque water was turned-on July 17. With the turning-on of the new supply in place of the Pequannock water which the town has been buying from the city of Newark since 1924, there were ended not only the long efforts of the municipal officials to obtain a new supply, but the changing of much of the town's distribution system to meet the new requirements.

Montclair, which is a partner to the extent of 5,000,000 gallons per day, for years was served by the Montclair Water Co., a subsidiary of the East Jersey Water Co., now the Passaic Consolidated Water Co. The supply obtained from the Passaic River at Little Falls, where it also was filtered, was not liked by the residents, so the town decided to purchase the distribution system. A majority of the town commission agreed to the company's price of $1,700,000, but several citizens objected to this amount. Public meetings were held, and over the protests of the objectors the system was bought at that figure.

With the purchase of the system, the town, however, was still without a source of supply. It had agreed to become a partner in the Wanaque project, but this supply was not ready and was not expected to be completed for several years. In the interim, Newark agreed to sell water at a rate of $90 per 1,000,000 gallons, and this became the town's supply.

### The Wanaque Sppply

The Wanaque supply is obtained from the waters of the Wanaque River and its tributaries, and the water is stored in a 29,000,000,000-gallon reservoir and carried to the municipalities about 25 miles through twin pipe lines. The entire project cost approximately $27,000,000. Two years elapsed between the completion of the reservoir and the completion of the aqueduct, which were expected to have been constructed simultaneously. This was due to a change in the plans for the aqueduct. The original plans for a single concrete line were scrapped by the North Jersey District Water Supply Commission, in charge of construction, and the steel lines substituted.

When the aqueduct was partially completed, it was seen that considerable time could be saved if a bonus were offered the T. A. Gillespie Co., contractors. Seven of the eight municipalities agreed to the bonus of $2,000 per day, but the eighth refused and the project was dropped. Newark and Kearny, two of the partners in favor of the project, saw a chance to sell water to Bayonne and offered the bonus, agreeing to pay it from the money received from the sale of water to that city. The other partners, including Montclair, were given an opportunity to participate, which they did. The construction work was speeded up and the job completed 120 days ahead of the scheduled date.

### Financing

When the bonus is paid, the money from the sale of water to Bayonne is to be divided among the various partners in proportion to the amount of their unused waters that are sold to Bayonne. It is estimated that, with the operation charge and the investment, the cost to Montclair will be less per 1,000,000 gallons than the price paid Newark and this may be lowered by sale of additional unused water to other municipalities by Montclair.

The basic rate in Montclair has been $2.90 per 1,000 cubic feet, with a lower rate for large quantities. In addition to this, a service charge is imposed. This rate is based on $16.96 per square inch of supply.

### Elevated Storage

In order to add to the pressure of the town system and to provide a storage supply for use in emergencies, a water tank of 282,000 gallons was erected by the Montclair Water Co. on the top of the Watchung Mountains, one of the highest points in the town. Prior to the completion of the Wanaque aqueduct and under direction of Arthur P. Heyer, Director of the Department of Public Works, a second tank of 2,500,000 gallons capacity was erected alongside the first tank. The two are connected by a 12-inch main.

The pressure of the water delivered from the Pequannock supply was 45 pounds at an elevation of 275 feet, while the pressure of the Wanaque supply is 35 pounds at an elevation of 220 feet.

THE TWO WATER STORAGE TANKS ON THE WATCHUNG MOUNTAINS
At right, the old 282,000-gallon tank; and at the left, the new 2,500,000-gallon tank

THE NEW PUMPING STATION UNDER CONSTRUCTION, AND THE TEMPORARY STATION IN THE FOREGROUND

### Pumping Stations

A pumping station was located by the water company about half-way down the slope of the mountainside upon which the town is built, to provide the supply to the original tank. This was rebuilt under direction of Mr. Heyer, and when the new tank was completed, a 24-inch main was laid from the pumps to the tank.

In addition, another pumping station is being erected a few feet from the Wanaque take-off. These pumps will be divided into three units. The first unit will consist of two pumps of 1½ and 2½ million gallons capacity. The second unit will be one pump of 4½ million gallons, and the third unit will be a 5,000,000-gallon pump. These are electrically operated and, in addition as an emergency stand-by, a 5,000,000-gallon pump operated by a gasoline motor will be installed.

Because of the time required to install these units, the second unit was installed in a temporary station soon after the completion of the aqueduct. This saved $300 per day for a period of four months, the time needed to erect and install the permanent station. With these pumps the town is assured a supply as long as the aqueduct pipes are running full.

### Pressure Zones Established

When the town system was designed, three pressure areas were included. When the new system was contemplated, a change to a two-pressure area was suggested. While opponents of the latter plan conceded that if a new system were to be designed, this plan was the better, they opposed it on the grounds that it would require too many changes in the present distributing system, and the two-pressure plan was abandoned.

Under the present system, the high area has a pressure of from 0 at the tank to 135 pounds at the lowest point. The middle area has a pressure of from 75 to 135 pounds, and the low-area pressure ranges from 60 to 135 pounds. The three areas are controlled through regulators. Most of the more hazardous buildings from a fire standpoint are in the low-pressure area, and in the event of a large conflagration in that section, the pressure from the higher areas is automatically turned in at once.

### Improvements in Distribution System

The system when taken over by the town was found to be inadequate. Mains were too small and gates were scattered about, so that if a break occurred, several hours were required to close the gates which controlled the supply to the broken main. Under Mr. Heyer this has been eliminated. Larger mains have been installed and the gates have been replaced and relocated so that one now takes the place of several. As a further control of the entire system, a remote control gate operated from the pumping station was located at the storage tanks.

In addition to supplying its own residents, the town is also supplying the neighboring community of Cedar Grove, and Glen Ridge, another partner in the Wanaque development, is obtaining its supply through Montclair, tapping the main supply mains at three places in Montclair.

Thus Montclair, a town of 42,000 in the metropolitan area, believes it has solved its water-supply problem for the next two decades. Most of the construction work of a major nature is completed, and there remains only the maintenance and extension of the system as new building developments require additional water.

## The Detroit Attitude Towards Drug Addicts

STUDENTS of the subject have estimated that Detroit has 10,000 drug addicts, and that these addicts consume anywhere from two to twenty grains a day of morphine, heroin, or cocaine, with a probable average of six to eight grains per addict, and a probable average daily expenditure of $15. The continued use of any drug brings moral degeneracy. The addict soon becomes unable to work—or even to beg successfully, therefore the only means left open whereby he can get sufficient money for the drug, is theft or some equally vicious "racket."

Some suggestion of what all this is costing Detroit is given in the weekly pamphlet "*Just a Minute*," published by the Detroit Bureau of Governmental Research, which says: "The equation is full of unknowns and estimates. But multiply the number of indigent addicts by the average daily expenditure of each for drugs, and then by ten, and the result is a rough approximation of what the poppy flower is costing Detroit each day—not to consider indigency, disease, police and court activities, labor loss, etc."

And what is Detroit doing about it?

"In Michigan, the Narcotic Educational Association, supported by the Community Fund, has carried on an experiment during the past five or six years to aid law enforcement against drugs, to educate the public to their dangers, and to help the addict solve his problem of rehabilitation.

"As a service to the addict, a farm hospital has been established about 60 miles from Detroit. Here the patient is given a short-time medical treatment during the withdrawal from drugs, and then a long-time reconstruction period, taking advantage of outdoor labor, fresh air, and sunshine, and a complete change of environment."

Detroit has faced the problem. The Michigan experiment is intended to prove whether drug addiction can be cured. (The indication, so far, is that it can.) Eventually the country as a whole must recognize the claim of the drug addict upon society. He must be cured, or he must be continuously quarantined, says the report above mentioned. Meanwhile, there must be more rigid control of narcotic drugs for even medical and experimental purposes. "It is a conflict between the poppy and civilization."

*Marcus, in New York Times*

# Attacking City Noises by Science and Law

*By* LEWIS H. BROWN
**Chairman, Noise Abatement Commission,**
**New York City**

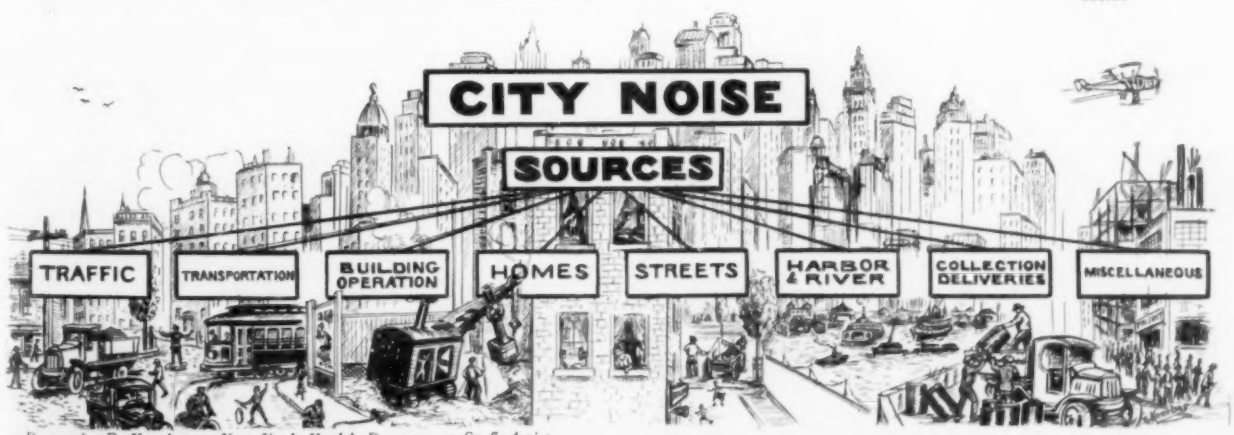
CITY noise has always existed, but the noise of modern cities so far exceeds that of earlier communities that the words used throughout the ages are inadequate to describe it. "Tintinnabulation, bombilation, vociferation; shriek, clatter, jangle, whine, jar, roar, cacophony"—the dictionary words fail to portray the synthesis of sounds that assail the ears of city dwellers during the day and far into the night. The only way to describe the composite of city noise is to catalog the sources: sounding motor horns, rattling trucks, vociferous loudspeakers, tugboat whistles, rumbling subway trains, zooming aeroplanes, pneumatic drills, steel riveting, and so on through the list of familiar noise-producers.

In the city of New York for many years the Department of Health and the Police Department had been handling individual complaints against noise. These departments were aware that in these instances noise was a marked hindrance to work and a disturber of sleep. It was reasonable to suppose that people who never registered their complaints also suffered from both day noise and night noise. Believing that more could be accomplished by attacking city noise as a common problem rather than making an individual case out of every complaint that came into the office, Shirley W. Wynne, Commissioner of Health, formed the Noise Abatement Commission in the fall of 1929. And to attack the noise problem on all its many sides at once, he invited men from the various fields touching upon the matter—medicine, neurology, otology, law, law administration, acoustics, engineering, construction, and the automotive industries.

The first question the Commission encountered was: What noises most disturb New Yorkers and where are they? A questionnaire was prepared and published in the metropolitan papers. Replies poured in from all parts of the five boroughs, revealing that traffic, transportation, and radio noises lead as annoyance causers. In fact, the leading ten noises complained of were noises produced by machine-age inventions, while the eleventh on the list was the first to bring in the sounds of human activity, namely, noisy parties and entertainments. And so through twenty-nine listed noises that annoy and disturb.

Classification of the sources of annoying noises revealed:

| Source | Per Cent of Total Complaints |
|---|---|
| Traffic | 36.28 |
| Transportation | 16.29 |
| Radios (homes, streets, and stores) | 12.34 |
| Collections and deliveries | 9.25 |
| Whistles and bells | 8.28 |
| Construction | 7.40 |
| Vocal | 7.27 |
| Others | 2.89 |
| | 100.00 |




*Drawn by E. Koerber, a New York Health Department Staff Artist*

THE NOISE ABATEMENT COMMISSION, NEW YORK, VISUALIZES ITS FIELD OF WORK

Incidentally, it should be explained that these complaints were followed up and investigated and referred to the proper authorities. Traffic noise complaints were referred to the Police Department; others to the Department of Sanitation and to the Transit Commission. The bulk of the complaints, ranging from radio noise to the barking of dogs, from the early morning collection of garbage by private companies to the late evening whoopee of convivial groups, was handled by the Department of Health. This gave a practical check-up on just what could be done under existing regulations to abate the noise of New York.

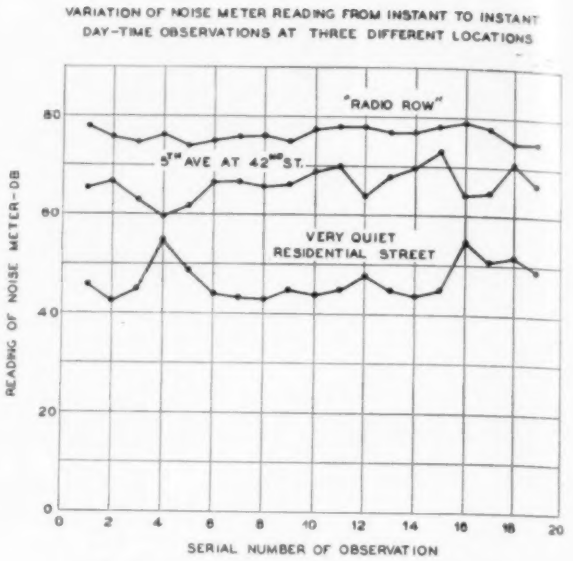
### Measuring Noises

From the replies to the questionnaire a traffic noise map of the city was prepared to serve as guide to the noise survey the Commission was preparing to make, the first complete scientific survey and analysis of city noise ever attempted. Through the cooperation of private companies already well equipped with laboratories, apparatus, and trained technical experts, the Commission was able to undertake this work. The Bell Telephone Laboratories furnished the necessary noise-measuring apparatus, which was mounted on one of the trucks of the Health Department for easy transportation. Both the Bell Telephone Laboratories and the Johns-Manville Corporation donated the services of engineers to carry on the survey.

The noise-measuring truck cruised the streets of Brooklyn, The Bronx, Manhattan, and Queens, taking measurements at 138 stations, 97 of which were out of doors, the remainder being in subways, offices, hospitals, etc. "The 97 outdoor locations represent a wide range of noise conditions," Dr. Rogers H. Galt, in charge of this work, reported, "from the quiet of a remote residential street to the din of the main highways; a wide range of traffic conditions, from no traffic to 129 automobiles per minute; and a wide range of geographical conditions, from the open terrain of the campus of New York University to the shut-in canyon of lower Broadway. Measurements were made near excavation and construction work; in a subway; beside elevated lines; on a bridge over East River; on the pier and simultaneously in an office when the whistle of a departing steamship was blown; on the streets near two schools and two hospitals; in rooms of a hospital and of a place of business, and on the adjacent streets; on 'Radio Row'; and under other special conditions."

ALONG RADIO ROW

Many store fronts poured forth torrents of sound until the city ordinance sponsored by the Noise Abatement Commission checked this abuse of loud speakers




ONE OF A SERIES OF TYPICAL OBSERVATIONS

In all, 10,000 observations were made out of doors, 7,500 of which recorded the sum total of noise at the particular place and time, and the remainder of which were made to identify and record the component noises. A frequency analysis of noise produced by each of several separate sources was also made at many stations to determine the masking or deafening effect of the three separate ranges of pitch—high, low, and medium.*

The measurements were made in decibels, the decibel scale ranging from zero, the slightest sound audible to the normal human ear, to 100, the sound so loud that the ear is set tingling.

The greatest daytime noise level recorded was 101 decibels—the noise made by a riveter on elevated highway construction and measured at a distance of 35 feet; the lowest daytime noise level, 42 and 43 decibels. The lowest night-time noise level recorded was 38 decibels. The compared reading of the instant to instant noise meter readings for three typical stations is shown in the noise meter chart above.

* The masking effect of noise is experienced by everyone in conducting a conversation. If two persons are speaking with each other in a quiet place, they need only speak with the minimum of effort; if, however, they are carrying on their conversation on a train, they must raise their voices to overcome the masking or deafening effect of the train noise.

This survey was supplemented by the study of indoor noise, especially the New York City measurements, made in 1929 by the National Electric Light Association and the American Telephone and Telegraph Co. All measurements were carefully checked with previous noise measurement studies.†

A special test was also made of automobile horns, the findings showing that many horns in common use are too loud for the requirements of city streets and that a common fault of many horns and warning signals is their disagreeable and unnecessarily alarming overtones. American horn manufacturers are now working on the development of horns to fulfill the requirements of New York City.

*Photograph from Bell Telephone Laboratories*

INVESTIGATING AUTOMOBILE HORN NOISES

The operator with a microphone (left center) is recording a noise level measurement. At the rear of the truck is the apparatus for measuring the deafening effect of noise

### What Noise Does to Us

All this was the work of the Committee on Noise Measurement and Survey. During the same time, three other committees were engaged in looking into the other sides of the noise question, each following an outline of work agreed upon at the first meeting of the Commission.

What noise does to us occupied the attention of the Committee on the Effect of Noise on Human Beings. Assembling the hitherto rather scattered findings on the effects of noise—findings, by the way, that have been greatly augmented during the last decade through the work of psychologists, safety engineers, and efficiency engineers as well as by research workers in the medical field—the Committee found it necessary to conduct further experiments to determine the extent of the suspected physical effect of noise on normal human beings.

These experiments were conducted at Bellevue Hospital under the direction of Dr. Foster Kennedy, who found that sudden noise, such as the explosion of an inflated paper bag, raised the intercranial pressure to four times the normal for seven seconds. Thereafter, this pressure, though not remaining as high, did not return to normal until thirty seconds had passed. If a second explosion followed the first before its effect had subsided, a new peak in the intercranial pressure curve was evident. Checking this with the increase of brain pressure produced by morphine and nitroglycerine—two drugs known to raise the pressure of the brain more than any other drugs—it was found to be greater. If this is what an innocent paper-bag explosion can do to the brain, what does an unmuffled motor do? the committee asks.

It is shown unequivocally that noise has a profound effect on the lives of brain workers and school and college students as well as upon expectant mothers, the sick, and all children. Whole hours of the day are often wasted because we cannot completely concentrate on mental work. Employers have already learned that workers cannot produce such accurate work or work in such quantity under noisy conditions, regardless of the nature of the work. Experiments have shown 19 per cent more energy is expended working in a noisy environment than working in a comparatively quiet environment. Noise is found to make concentration difficult, if not impossible. Attempts to overcome surrounding noise place great strain upon the nervous system, leading to neurasthenic and psychasthenic states. It is well established that the normal development of infants and young children is seriously interfered with by constant loud noise.

### Quieting Steel Construction

The noise of tearing down, repairing, and erecting buildings was the concern of the Committee on Building Code and Construction. This particular noise, or rather noises, New Yorkers have endured under protest for a long time. Very few have not at some time been forced to do their daily work to the shattering tune of riveting or pneumatic drilling. Welding as a partial substitute for riveting in the erection of steel structures was considered by the Com-

† "On the decibel scale, the unit is actually about equal to the smallest change which the ear can detect on the lower level of sound. . . . Let us suppose that if one person alone rattles his paper, the sound is just audible; this sound is said to be at threshold intensity. Then if ten persons rattle their papers, the sound will be ten times as intense as the threshold sound; if twenty persons rattle their papers, the sound will be twenty times as intense as the threshold sound. On this basis, a scale could conceivably be constructed such that the number of units would always be increased by ten if ten additional persons rattled their papers. Such a scale, however, would involve certain difficulties which may easily be understood. Suppose, for instance, that ten persons are rattling papers; the addition of ten more persons would beyond doubt produce a considerable increase in the noise; whereas, if at the start a thousand persons were causing the noise, the addition of ten more persons would not be noticeable. It scarcely seems proper, therefore, to ascribe always the same importance to an added ten persons. A more fair estimation would be to consider what per cent is added; if we add ten persons to an original ten, we have added 100 per cent of the original number, and the noise level has been increased by a certain number of units; then if we start with a thousand persons and add another thousand, we have in this case also increased the number . . . by 100 per cent, and hence may say that the noise is increased by the same number of units as in the former case. . . . More accurately, the decibel is defined as follows: if the intensities of two sounds are in the ratio 10:1, the sounds differ in level by 10 decibels; if the intensities are in the ratio $10^2$:1—that is, 100:1—the sounds differ by 20 decibels; and in general, the number of decibels measuring the difference in level between two sounds is ten times the common logarithm of the intensity ratio—that is, the power ratio."

—Rogers H. Galt.

"I WAKE FROM MY SLUMBER AND LIST TO THE ROAR AND IT SAITH TO MY SPIRIT, 'NO MORE, NEVER MORE'"

By Rollin Kirby in *The World*

mittee and the recommendations of the Merchants' Association endorsed:

"Welding has been developed to a high degree in the shop fabrication of many items, much more so than for structural steel. It is gradually, however, being extended into that field and must soon take its place as supplementing the present widespread use of riveting wherever its characteristics make it the logical method. At the present moment, however, its use must be surrounded by certain well-recognized safeguards to prevent incompetent and irresponsible individuals from attempting a more widespread use of the method than the available supply of competent designers, workmen and inspectors justify. . . . In the interest of economy and to help in the reduction of noise, your Committee [Merchants' Association Committee] has judged it advisable to permit bolting of structures of medium height, when no wind stresses are involved."

Further, the Committee on Building Code and Construction recommends that an amendment be made to the Sanitary Code restricting riveting in residential districts to daylight hours.

In the matter of building operations, the Committee urges that special provisions be inserted in the Building Code requiring that contractors' appliances and machinery used in demolition and in construction of subways, sewers, and streets be made as noiseless as possible either by means of sound-absorbing devices or by special design of the machinery itself and by care to keep it in good condition.

The silencing of new subways and elevated lines is recommended, and the study made by the Board of Transportation during the last few years was utilized.

### Transportation Noises

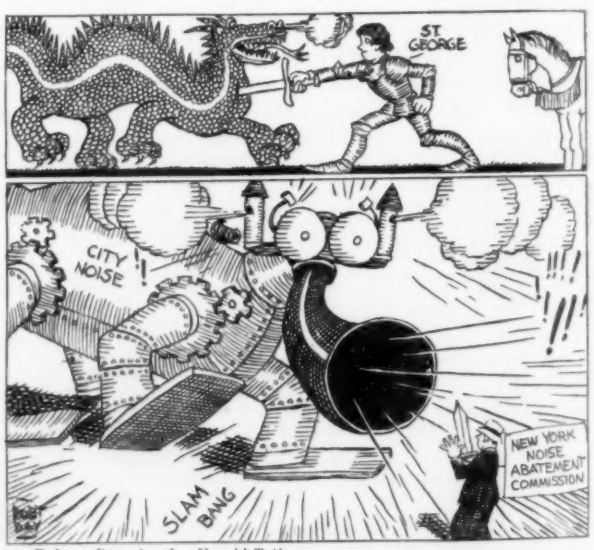
This study listed practical means of noise reduction in subways as follows: a specially designed truck, giving less chance of noise from loose or rattling parts; a cast-iron ring inside the rim of the gear on each side to prevent a ringing sound from the gears; felt insulation on the inside of all side sheets of the car bodies; rails laid practically end to end instead of having a small space at the joints; ties imbedded in concrete. The use of rubber pads between the ties and the rails or between the ties and the steel structure is recommended for reducing the noise of elevated railways.

For silencing surface car lines, the Noise Abatement Commission's Committee recommends keeping the tracks and rolling stock in good condition. "No one can predict the future useful life of our surface street car systems," the Committee said. "It would therefore be unfair to compel them to make extensive and costly changes." Regarding unpleasant gongs and bells used as warning signals, the Committee urges that the Transit Commission investigate all cases and cause those signals found objectionable to be eliminated.

### Enforcing Noise Restrictions

A careful study of existing legislation by Charles C. Burlingham, Chairman of the Committee on Practical Remedies, revealed that with one or two exceptions the laws in effect could be used to abate the objectionable noises of New York City. Bells and gongs, exhaust horns, and unmuffled motor vehicles are prohibited. There are general provisions against unnecessary noise on streets, and special ordinances against undue noise on hospital and school streets. Peddlers and hawkers are regulated as to their hours for crying their wares; junkmen's bells are regulated. There are regulations for the loading of iron and steel rails. Musicians and showmen must obtain a license before they may operate musical instruments on the street. The use of noise to attract people to auctions is prohibited. Bells and gongs in buildings are regulated. Noisy pets are forbidden. Where a nuisance is found by the Board of Health, it must be abated when an order is granted. There is the general provision to keep premises free from conditions prejudicial to life and health.

The question of enforcing such laws has been the great problem. To simplify enforcement, an amendment to the




*Robert Day, in the Herald-Tribune*

NOISE CONTROL AND THE PRESS

The extent to which the noise nuisance has become a pressing public problem in New York is indicated by the amount of space devoted to the subject by the newspapers. On this and on page — are typical recent cartoons

Greater New York Charter is proposed by the Commission, as follows:

In the case of minor offenses constituting violations of the Code of Ordinances, including the Sanitary Code and Park Ordinances, and not involving serious danger to health, morals, safety or public welfare, the head of any administrative department the administration of which is concerned with any such violations is hereby authorized and empowered to prepare and promulgate a schedule of such offenses with fixed fines or penalties applicable thereto not to exceed five dollars for each such offense to be paid by offenders who confess violation of the same and who do not desire a judicial hearing. Said department heads are further authorized and empowered to make uniform rules regulating the giving of notice of such violations by department representatives. Any notice or violation hereunder shall be returnable at the office of the Chamberlain of the city of New York, who shall make proper provision for the receiving of payment of such fines (in the several boroughs) and the giving of proper receipts therefor. Each department on the service of any such notice shall immediately notify the said Chamberlain thereof, and in case any violator shall fail to pay such fine within the time specified therefor the Chamberlain shall inform the department issuing such notice, which shall thereupon cause a summons to be served on said violator. Nothing in this section contained shall prevent the police or representative of any department from sending a summons in a proper case or making an arrest as provided by law.

Instead of leaving the enforcement of the law regarding minor offenses to the individual enterprise of disturbed and irate citizens, this law would make it almost automatic. In effect, it is merely an extension to other minor violations of the system now employed before the Commissioner of Licenses and also for certain violations of the Sanitary Code, where the Commissioner is empowered to hear and determine complaints and impose small fines.

The advantage of such a law would be the relief from the annoyance of court proceedings in the vast majority of cases which make it necessary for policemen to leave their regular duties to attend court. It would also do away with absurdly disproportionate fines attached to many minor violations, such as the fine of $500 or imprisonment for one year for spitting on the elevated trains.

Endorsed by the heads of the Police Department, the Sanitary Commission, and the Park Commission, as well as by the Commissioner of Health, for the help it would give them in enforcing the laws relating to the many minor offenses under their jurisdiction, the amendment is now in the hands of the Drafting Commissioner of the Municipal Assembly.

In the meantime, there has been added to the Sanitary Code a general provision against too loud radios, and a city ordinance has been passed prohibiting the operation of loudspeakers in front of shops. This latter is merely an extension of the principle that forbade the use of noise outside auction rooms for the purpose of attracting a crowd.

The prohibition of automobile warning signals when cars are at rest, except in the presence of imminent danger, is proposed as an amendment to the Sanitary Code.

For the rest, the Committee on Practical Remedies looks to the education of the public in noise abatement and to cooperation with manufacturers, business organizations, and government agencies in abating noise at the source.

Members of the Noise Abatement Commission are:

Lewis H. Brown, President, Johns-Manville Corporation, Chairman.
Albin H. Beyer, C.E., Professor of Civil Engineering, Director of Testing, Department of Civil Engineering, Columbia University.
Samuel A. Brown, M.D., Dean of New York University and Bellevue Hospital Medical College.
Charles C. Burlingham, LL.B., President, the Association of the Bar of the City of New York.
Alexis Carrel, M.D., Member of Staff of Rockefeller Institute for Medical Research.
Joseph Eugene Corrigan, Chief City Magistrate, New York City.
Arthur B. Duel, M.D., Vice-President and Chairman, Board of Surgeons, Manhattan Eye and Ear Hospital.
Harvey Fletcher, Ph.D., Acoustical Research Director, Bell Telephone Laboratories; President, Acoustical Society of America.
Foster Kennedy, M.D., Professor of Neurology, Cornell University Medical College.
Samuel J. Kopetzky, M.D., Professor of Otology, New York Polyclinic Medical School and Hospital.
Edward P. Mulrooney, Police Commissioner, New York City.
Lawson Purdy, LL.D., General Director, Charity Organization Society.
Bernard Sachs, M.D., Neurologist, Mt. Sinai Hospital, Montefiore Home.
William Schroeder, Jr., M.D., Chairman, Sanitary Commission, Department of Sanitation, New York City.
Alfred H. Swayne, LL.B., Vice-President, General Motors Corporation.
Frederick Tilney, M.D., Professor of Neurology, College of Physicians and Surgeons.
Shirley W. Wynne, M.D., Dr. P.H., Commissioner of Health of New York City.
Edward F. Brown, Director, Special Deputy Commissioner of Health.
E. B. Dennis, Jr., Executive Secretary, Acoustical Engineer, Johns-Manville Corporation.

"City Noise is the title of an illustrated volume of 300 pages recently issued by the Noise Abatement Commission in the form of a report to the Health Department. Copies are available on request to the Commission, as long as they last. The illustrations in this article are reproduced therefrom, by permission.

# Three Villages Collaborate in Town Planning

WHEN a group of residential communities lie close together and suburban to a large city, their interests and problems in matters of transportation, street and highway development, zoning, and school and recreation facilities, are inseparably bound up together. Recognition of this fact on the part of the Boards of Trustees and Plan Commissioners of LaGrange, Western Springs, and LaGrange Park, Ill.—villages of the same general character and lying side by side in the Chicago suburbs—led recently to a collaborative development plan for the three. Jacob L. Crane, Jr., town planner, of Chicago, was employed as consultant. In his "Report of the Collaborative Town Plan for LaGrange, Western Springs, and LaGrange Park," now completed and published, he says that obviously the necessity for planning for these villages does not stop with the outer boundaries of the whole group, but at least the joint plan with the correlated ordinances, regulations, and procedures which they embody will enable each village to give proper recognition to the others; and that certainly the results may be expected to be more correct and effective than if three independent development plans were undertaken.

The report embodies recommendations covering basic planning problems: determination of land utilization; planning of primary streets and a highway system; the solution of railway questions; and the selection of parks, playgrounds, and school sites.

It also includes step-by-step recommendations for making the plans effective. Emphasis is placed upon the necessity for a consistent program to interest and inform the public and to secure public support for the collaborative plan, "because," says Mr. Crane, "*no matter how official legally the plans are made, they must have an informed public opinion behind them both to insure a continuity of policy and to bring the best citizens' thought to their revision and elaboration as time goes on.* Only in this way will the plan evolve as the direct expression of the desires and purposes and ambitions of the communities represented."

Emphasis is laid upon the fact that the plans should be amplified until finally they include every phase of city building down to the most specific details of structures and groups, but that to this end the fundamentals must be well established. Back of the published recommendations is an elaborate survey which was made by the collection and effective presentation, as by plotting on maps and charts, of sufficient data for the analyses of all the complex and varied problems involved as the planner saw them.

# What Shall We Do with Snow and Ice?

*By* **JOHN H. NUTTALL**
**Consulting Civil Engineer,**
**Philadelphia, Pa.**

SNOW which has been removed from street surfaces should be disposed of as quickly as possible in order to economize on vehicles. This entails quick, short hauling and quick dumping. The quickest haul is not necessarily the shortest, as traffic or other causes on a short haul may interfere with the progress of vehicles to such extent that a longer route may consume less time. The addition of large numbers of snow-laden vehicles to normal street traffic is objectionable, and the routes to points of snow removal should be adopted so as to provide for the quickest disposal of snow with the least obstruction to normal traffic. The routes to be chosen vary according to the time of day, as routes which may be congested with traffic during the day are often clear in the evening and almost invariably in the latter part of the night.

Quick disposal may be secured in streets carrying little traffic, by dumping into sewer manholes, but this procedure is objectionable in heavy traffic streets and it is frequently necessary to adopt other means of disposal during the heaviest hours of traffic in the daytime. One large eastern city dumps snow from bridges into the rivers on each side of the city during the daytime and uses the manholes in the heavy-traffic streets only at night. A few manholes in large-sized sewers in quiet locations are also used during the day.

Quick unloading of trucks and removal of snow depends upon the openings available and the interference from traffic. It is usually inconvenient to dump trucks into manholes in heavy-traffic streets and difficult to shovel the snow down the manhole when traffic is heavy. Dumps, river bulkheads or bridges where the load can be easily dumped without obstruction to traffic are best during the day, even when at a greater distance than manholes, which may be used at night. Where no facilities are available during the daytime without serious obstruction to traffic, it may be necessary to dump the snow upon an available lot, from which it may be removed at night to a permanent place of disposal.

## Inlets

It is not practical to shovel dry snow into inlets at low temperatures, because the inlet will be choked, particularly if it is provided with a trap, nor is it advisable to attempt to flush such snows down the inlets in cold weather. Soft snow when temperatures are near the melting point may be readily flushed down inlets with water from a flusher or fire hose, but must be agitated in the inlets in order to prevent clogging and packing. Care must be taken to keep the mass sufficiently fluid and to prevent large quantities from entering the inlet in too short a time.

## Manholes

Manholes for the receipt of snow should be of large size in order to economize on shovelers and should be located at points where the dumping of snow will not interfere with traffic. The manhole should be suitably protected to prevent accidents to vehicles and should be closed at night when work is completed.

## Sewers

The quantity of snow which a sewer will remove is dependent upon the grade, size, dry-weather flow, and character of its outlet. A sewer discharging above water level will carry off more water than one which is submerged, and a sewer discharging into a tidal stream will transport less snow because of the reverse action of the tide. Snow is carried in suspension in the sewer water until it is melted by heat abstracted from the sewage, and if much obstruction is met, there is a tendency for the water to seep through, leaving a concentrated mass of slush behind, which is likely to obstruct the sewer.

It is not advisable, for practical reasons, to use sewers of less than 5 feet in diameter, or the equivalent 19.6 square feet, for the disposal of snow, and it is not advisable to empty snow containing much dirt into sewers. The quantity of dirt in snow is variable, depending upon the section from which it is removed, and upon traffic and the habits of the people. Snow which has remained upon the streets for one week in a heavy-traffic section may often contain too great a quantity of dirt to justify dumping it in a sewer. The capacity of a sewer for disposing of snow must be considered on the basis of the dry-weather flow, which is principally sewage with a temperature of not over 60 degrees F. in winter.

The capacity of a sewer for transporting snow depends upon the volume of the dry-weather flow, its character, the grade of the sewer, and the number of turns and obstructions in the sewer. The normal dry-weather flow may be assumed as 1/10 of the depth of a sewer, in which case, at the average grade, a 10-foot sewer will pass 25 cubic feet of sewage per second, or 1,500 cubic feet per minute. Sewage at the temperature of 60 degrees F. can lose the quantity of heat represented by the decrease in temperature between 60 degrees F. and 32 degrees F., or 28 degrees F., for the melting of snow, and 1,500 cubic feet by 28 degrees by 62.4 pounds (weight of one cubic foot of water) equals 2,620,800 B.T.U., which is available each minute for the melting of snow.

The latent heat of fusion, which is the quantity of heat required to change snow at 32 degrees F. to water at the same temperature, is 143.6 B.T.U.; this divided into 2,620,800 B.T.U. indicates that 18,200 pounds of snow at 32 degrees F. will be melted per minute in the sewer.

The similar dry-weather flow of a 5-foot sewer is 4 cubic feet of sewage per second, or 240 cubic feet per minute, and the greatest amount of snow which will be melted in a sewer of this kind is 2,912 pounds per minute.

These weights of snow represent perfect melting, which is not possible to obtain in ordinary practice. The temperature of the sewage is reduced by the melting snow, and freezing of the whole mass is likely to occur at points where the velocity is least. If the efficiency of melting is 50 per cent, the actual quantities of snow which it is safe

to dump into 10- and 5-foot sewers are 9,100 and 1,456 pounds respectively. These figures represent the weight of snow at 32 degrees F. which it is safe to dump into sewers of these capacities, but a slightly less weight of snow will be melted at lower temperatures, and a safe capacity may be set as 2 tons per minute for a 10-foot sewer, and 0.25-ton for a 5-foot sewer. These quantities may be increased in sewers carrying a greater volume of sewage and in those where the velocity is higher, as the snow is available form.

In contemplating the use of sewers for the disposal of snow, the capacity of the sewer, character and location of manholes, the traffic to be encountered, the space for maneuvering at the manhole, the character of vehicles, and similar factors, should be considered and a plan should be prepared giving this information in a readily available form. Specially constructed manholes should be placed at chosen locations for quick disposal.

### Water

Bodies of water of sufficient size and depth, or those having sufficient current to promptly remove snow are excellent places of disposal. Snow should be dumped only in bodies of water used by vessels at points where the possible accumulation of snow beneath the surface will cause no obstruction to navigation. Open water is usually of the temperature of 35 degrees F., or less in the winter, and snow is not melted quickly in water of this temperature but is rapidly diffused by strong currents. Dirt and litter may float upon the surface or settle according to the density of the particles, and the dumping of dirty snow in docks is objectionable, as dredging will afterwards be required. Fresh snow contains little dirt, and no objection should be made to dumping in any dock space. Snow is readily dumped into bodies of water from bulkheads, wharves, or bridges, which should be provided with a substantial bumping-log or specially designed manholes. The dumping space should be of sufficient length to permit vehicles to dump readily without waiting or obstructing traffic. Fences guarding structures of this character when not in use should be readily removable to permit dumping. If dumping places of sufficient length cannot be secured for continuous dumping, it is sometimes practical to dump the snow in a pile in front and unload it afterwards into the river by means of a clamshell crane.

Laborers are always required at water dumping platforms to remove snow which has been spilled from the trucks, as a considerable quantity is usually dumped upon the unloading platform. Men are also required to remove snow from the bodies of vehicles, for snow frequently sticks to the bodies even where the angle of body elevation by means of lifting devices is high. An application of heavy oil to the inside of the truck body aids materially in removing the load promptly. Every precaution should be taken for the safety of the men trimming and unloading trucks. Wide bridges or those which are little used by heavy traffic are excellent for the dumping of snow. Bridges should be provided with removable railings, and high and substantial dumping logs upon the outside of large-sized openings in the footways.

Considerable overload may be caused on bridges by snow vehicles, workingmen and accumulated snow, and the strength of a bridge should always be investigated before it is used for snow disposal. This is particularly true of bridge footways, which are not usually designed for vehicular loads. Care must be taken not to dump snow from bridges while vessels are passing beneath.

### Dumps

Snow is usually removed principally from the business center of a city, and the regular municipal dumps are usually located in the suburbs, so that they are at too great a distance to be available for the dumping of snow. The use of such dumps for snow disposal is objectionable, for the snow dumped interferes with the use of the dumps for ordinary refuse by obstructing traffic and softening the fill. Open lots near the point of loading may be used for the temporary dumping of snow if the material is removed promptly to another location. Such open spaces should not be used for snow dumping unless the snow is afterwards removed, as dirt accumulates upon the piles, the ground is softened, and the dirt remains.

Ground within reasonable hauling distances of the loading points and not close to residential sections may be used for the piling of snow. Such a dump should possess good drainage and should be open to the sun. The snow should be piled at the points farthest from the entrance in order not to obstruct drainage and so that it will not be necessary to haul over the freshly dumped snow.

### Melting

Numerous proposals for the disposal of snow by melting are received each year by street cleaning departments. The objections to melting as a means of disposal are the same as the objections to the melting of snow upon the streets.

The specific heat of snow is 0.504 B.T.U., and that number of B.T.U. is required to raise the temperature of one pound of snow one degree F. The latent heat is 144 B. T. U. (exact, 143.6) and that quantity of heat is required to change snow at 32 degrees F. to water at the same temperature. Snow at 20 degrees F. will require 6 B.T.U. to raise it to 32 degrees, and 144 B.T.U. additional to change the snow to water, or 150 B.T.U. per pound of snow. Sixty per cent of the available heat in coal may be applied to the melting of snow in an efficient snow-melting apparatus, and if coal containing 13,500 B.T.U. is used, the available quantity of heat will be 8,100 B.T.U., which divided by 150 indicates that 1 pound of coal will melt 54 pounds of snow. The water produced by the melting of snow would be 32 degrees F. and would be rapidly frozen if permitted to escape.

Experiments have been made by railroads at points where disposal was difficult or where a long haul was necessary, with tank cars equipped with steam coils supplied by steam from a locomotive, but the snow melted was so little and the amount of coal used so great, that the attempts were abandoned as impractical.

Salt, and other materials such as alcohol, calcium chloride, and glycerin which lower the melting point of ice, may be used to melt snow, but the cost is practically prohibitive excepting when the snow is in thin sheets.

Ordinary salt, known chemically as sodium chloride, lowers the melting point of ice 1.2899 degrees F. for each per cent of salt held in solution, so that the weight of salt necessary to melt snow at any temperature can be computed. Approximately 10 per cent of salt is therefore required to melt snow at 20 degrees F. if perfect mixing of snow and salt is obtained.

# The Operation of a Well-organized Department of Waste Collection and Disposal

## *Part II: Incineration*

*By* **ALFRED E. HANSEN**
**Superintendent,**
**Division of Waste Collection and Disposal,**
**Pontiac, Mich.**

THE garbage and refuse incinerator at Pontiac, Mich., is a two-story brick building, the first floor constituting the charging floor, and below this the stoking floor. These two floors compose the main part of the building, which is 85 feet 9 inches long and 42 feet wide. Adjacent to the charging floor is the preheater room, which is 26 feet long and 24 feet wide.

### Charging Floor

The charging floor is where the garbage is dumped and fed into the furnaces. Loaded trucks entering this floor by means of an incoming ramp are then weighed, dump their load and leave by an outgoing ramp. The entrance and exit are at opposite ends of the building, permitting quick dumping facilities. Hot and cold water is available to flush this floor after each burn.

Located at one end of the charging floor is an office for the superintendent where complaints relative to the collection system are received, the loads weighed, and operating records kept. A locker-room adjoining the office provides the collectors and plant operators with individual lockers, shower-bath, and accommodations.

Provisions have been made at one end of the building for the construction of a storage bin to be used in the future when the amount of garbage collected during the day cannot be burned by the day shift and must be stored for a night shift. Crane rails have been laid permitting a crane to be used in conveying the garbage from the bin to the charging hoppers.

### Stoking Floor

The stoking floor is occupied mainly by the incinerating furnace. A small steam heating plant for heating the office and locker-room, a water heater, and an air-compressor for supplying air to the charging slides, are the only other units on this floor.

The incinerating furnace is 16 feet 3 inches wide and 67 feet 9 inches long; built in two sections, one a 4-cell unit and the other a 3-cell unit. These two units are joined by a combustion chamber where the gases given off by the burning refuse are ignited and rendered inert. The inert gases from the combustion chamber are then carried to the stack through the smoke duct.

Located in the smoke duct in back of the combustion chamber is a gas grill, constructed of fire-brick with 6 x 6-inch openings. This grill prevents any pieces of paper or other substances from being carried up into the stack, and also tends to hold the heat in the combustion chamber so that more complete combustion of the obnoxious gases may take place. Access to the combustion chamber and smoke duct for the purpose of clean-out and repair work is obtained through specially constructed doors.

The main walls of the furnace are 2 feet 6½ inches thick, being composed of 9 inches of fire-brick, 4½ inches of Sil-o-cel insulation, and 17 inches of clay brick. The exterior of the furnace is a yellow salt-glazed face brick, presenting a very attractive appearance. To lessen the possibility of the cracking of the brick from any undue expansion, buck-stays built up of two 8-inch channels have been spaced at intervals around the furnace, and joined with 1½-inch tie-bars.

Each cell of the furnace receives its charge of refuse from the charging floor through a charging hopper. The charging hoppers are constructed of steel plate, being 2 feet 4 inches in diameter and 4 feet deep. At the bottom of the charging hopper is a slide which when open permits the garbage to drop into the furnace, and when closed permits the hopper to be filled again. The stoker operates this slide from the stoking floor by means of compressed air.

The arch of the furnace is of 12-inch wedge-shaped fire-brick insulated with 4 inches of cork brick and plastered with asbestos. The circular feed hole openings in the arch are made with a special brick.

The grates are 4 feet by 10 feet and are manually operated by the stoker. Fire-brick clinker breakers are built between the grates to prevent the formation of clinkers. Baffle-walls have been built in a staggered formation to insure more even and better burning. A drying pan constructed of fire-brick is placed in both the 3-cell and 4-cell units. The cells having these pans are used for the wet restaurant garbage. Each cell is equipped with two stoking doors and two clean-out doors, permitting stoking and clean-out from both sides of the furnace.

### Preheater

The preheater is of the Green fuel economizer type, and consists of a series of tubes through which the hot gases from the smoke duct are by-passed. A blower passes air around these hot tubes down through the forced-draft duct to each furnace cell.

The opening for the forced draft for each cell is in the side of the ash-pit. The intensity of the draft from this opening is controlled by a small butterfly damper operated by the stoker. A large butterfly damper is placed in the preheater breech of the stack, so that when repair work is done in the preheater no danger of a stack back-lash will be present.

### Stack

The stack is of the Custodis type, being 140 feet in height and having an inside diameter of 8 feet. It has a full-length fire-brick lining, which is insulated from the

outside brick by means of an air gap. Openings in the outside brick at the base of the stack permit the circulation of air in this gap.

### Plant Operation

There are two classes of garbage brought to the incinerator plant; one is the wrapped and drained household garbage, the other, the unwrapped and undrained restaurant garbage. An analysis of the average run of garbage gives 74 per cent moisture, 22 per cent combustible, and 4 per cent ash.

Two methods of incineration may be employed to reduce this garbage to an inert ash—one without coal, the other with coal.

### Incineration without Coal (Natural Draft)

The Pontiac incinerator plant was guaranteed to burn without additional fuel when a mixture of 65 per cent garbage and 35 per cent rubbish was available. This mixture gives an approximate temperature of 1,500 degrees. In actual practice and under normal conditions, we have found that a mixture of 75 per cent garbage and 25 per cent rubbish will insure complete incineration, the temperature ranging from 1,250 degrees to 1,300 degrees. It must be noted that the 25 per cent is the actual rubbish added to the garbage and does not take into consideration the paper wrappings of the household garbage.

The garbage and rubbish are collected separately and each load is weighed on entering the plant. The garbage is dumped on one side of the charging hoppers, and the rubbish on the other. This facilitates in mixing the two to obtain a good burning mixture.

The procedure of burning is as follows. First, the smoke duct damper is opened, and the preheater damper allowed to remain closed, permitting the gases to go directly to the stack. The front ash-pit doors are opened, allowing draft for each cell. Rubbish is then distributed on the grates and a good bottom fire started. When this fire is of sufficient intensity, the stoker drops a charge of garbage on it, spreads it, and receives a charge of rubbish on top of it. After the first charge of garbage is dried and ignited, alternate charges of garbage and rubbish are continuously fed into the furnace. The men charging on top note the intensity of the fire, and may give the stoker several charges of rubbish to build up a dull fire, or several charges of garbage for an intense fire.

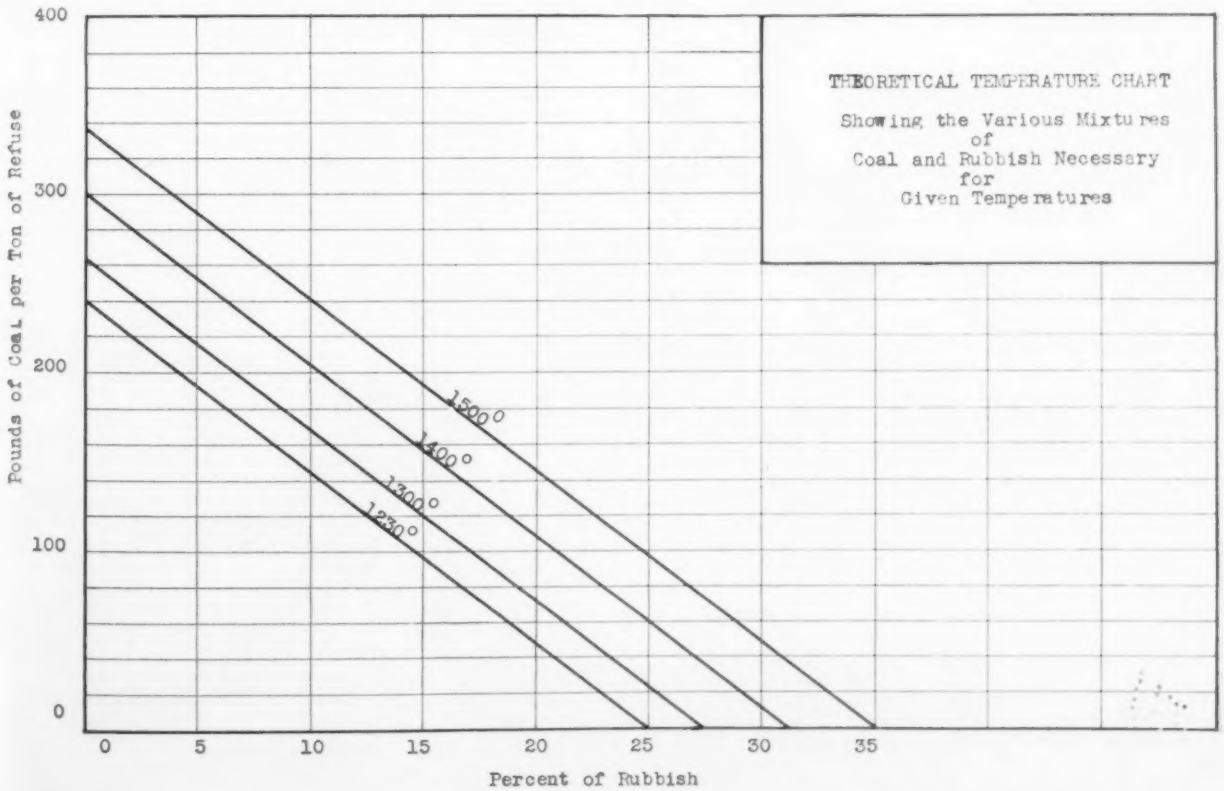
When suitable rubbish is available, a temperature of 1,500 degrees F. is obtainable by this procedure, allowing the garbage to be burned as fast as the hoppers can be filled and dropped.

For the operation of the 4-cell unit, two chargers and one stoker are needed; for both units combined, three chargers and two stokers are used. The rated capacity of the furnace is 1 ton per hour per cell.

### Incineration with Coal (Natural Draft)

Coal is used only when the rubbish supply becomes meager, which occurs probably two or three days out of the year. When no rubbish at all is available, it requires approximately 335 pounds of coal to burn one ton of garbage. The accompanying chart indicates the amount of coal necessary with certain percentages of rubbish to obtain the specified temperatures.

When coal is used, the furnace is prepared in the same manner as it would be for rubbish, with the exception that no bottom fire is started. Instead of a bottom fire, a coal fire is started in each stoking door. When this fire is well underway, garbage is dropped on the grates and spread out, allowing the flames from the coal fire to sweep over it, drying and burning it. The maintenance of a good coal fire in the stoking door is essential for proper incineration.



The number of men required for operation when coal is used is the same as when rubbish is used. A ton of garbage is burned as rapidly with coal as it is with rubbish.

### Use of the Preheater

The preheater is used to aid in the burning of heavy wet runs of garbage which occur about four or five times a year. Its operation is the same whether coal or rubbish is used as fuel.

The first step in the operation of the preheater is to close all the ash-pit doors and turn on the blower. After this, the preheater damper is opened and the smoke-duct damper closed. Then, instead of going directly to the stack, the gases are by-passed through the preheater tubes; air forced around these hot tubes by a blower can attain a temperature of 300 degrees F. A forced-draft duct conveys this heated air to each furnace cell.

The preheated forced draft performs two important functions. First, it raises the temperature of the furnace by an amount equal to its own temperature. For instance, if the temperature of the furnace without the preheater is 1,500 degrees F., then when the preheater is placed in operation and forced draft of 300 degrees F. is directed into each cell, the resulting temperature of the furnace will be 1,800 degrees F. Secondly, the forced draft increases the oxygen content in the furnaces, thereby accelerating combustion.

Operating records of the plant have been worked up with the purpose of presenting at the end of each month a picture of the plant operation for that month. The following is a summary of the operating record for the first four months of 1930:

PLANT OPERATION

| | Jan. | Feb. | Mar | April |
|---|---|---|---|---|
| Refuse incinerated (tons) | 301.05 | 239.42 | 313.29 | 354.08 |
| Per cent rubbish | 28.7% | *16.3% | 26.2% | 22.5% |
| Man-hours charging (per ton) | .394 | .456 | .385 | .351 |
| Man-hours stoking (per ton) | .212 | .236 | .213 | .189 |
| Total man-hours burning (per ton) | .606 | .692 | .598 | .540 |
| Man-hours pulling ashes (per ton) | .228 | .192 | .201 | .204 |
| Man-hours wheeling ashes (per ton) | .261 | .230 | .210 | .185 |
| Total man-hours cleaning (per ton) | .489 | .422 | .411 | .339 |
| Total man-hours cleaning and burning (per ton) | 1.095 | 1.114 | 1.009 | .929 |
| Hours burnings | 63.75 | 43.45 | 66.75 | 66.75 |
| Tons per hour per cell (rate 1:00 ton) | 1.18 | 1.16 | 1.17 | 1.33 |
| Wheelbarrows of cans and ashes | 1444 | 964 | 1442 | 1655 |
| Weight of cans and ashes (tons) | 53.59 | 33.82 | 55.60 | 71.05 |
| Per cent ash | 17.8% | 14.1% | 17.8% | 20.1% |
| Kwh. per ton | .96 | .94 | .86 | 1.01 |

*Necessary to use 140.5 lbs. of coal per ton.

### Costs

Contrary to the general opinion, it is cheaper to burn with coal than with rubbish. Owing to the fact, however, that a public service is being rendered by the collection of combustible rubbish, it is the logical fuel to use. The following is a cost analysis of the two fuels, made with the assumption that the same temperature is to be maintained in each case:

(1) 0.1675 tons of coal per ton of garbage @ $5.55=$0.93.
(2) 0.35 tons of rubbish per ton of mixture @ $3.45=$1.21.

The operating costs for the garbage burned during April, 1930, was $1.11 per ton. This figure includes supervision, labor, maintenance, power, insurance, and miscellaneous costs.

# Municipal and Commercial Airports on the Increase

BETWEEN July 15, 1930, and December 31, 1930, 125 airports and landing fields were put into operation in the United States, 48 of which were municipal, according to a report issued by the Aeronautics Branch of the Department of Commerce.

While on July 15 there were 1,657 airports, on December 31 there were 1,782 projects of all types. Of these, 550 were municipal, 564 commercial, 354 intermediate, 240 auxiliary, 53 Army, 14 Navy, and 7 miscellaneous airports and landing fields. Corresponding figures for July 15 were as follows: 502 municipal, 535 commercial, 333 intermediate, 206 auxiliary, 60 Army, and 14 Navy airports and landing fields, and 7 miscellaneous Government and private airports.

Fields are classified as municipal when established by cities or towns, while those established by private commercial interests are classed as commercial airports. Intermediate landing fields are established and maintained by the Department of Commerce on Federal airways, and are marked and equipped with lights and other air navigation facilities. Auxiliary fields include those which are established and marked locally in some manner for the use of aircraft, but do not have the same standard of equipment and facilities as the other types.

As shown in the table herewith, California remains in the lead in the number of airports and landing fields. It was also shown to be in the lead in the number of municipal and commercial airports on December 31, having 61 of the former, and 54 of the latter. Texas, with 119 fields, was next to California's 165, and Pennsylvania was third, with 94. Alaska had the largest number of auxiliary fields.

These figures represent a large increase since the beginning of the year. The 1930 Municipal Index listed 397 cities having municipal airports in February, 1930, as reported by the Aeronautics Branch and checked up by correspondence.

AIRPORTS AND LANDING FIELDS, DECEMBER 31, 1930

| | Municipal | Commercial | Intermediate | Auxiliary | Army | Navy | Miscellaneous | Totals |
|---|---|---|---|---|---|---|---|---|
| Alabama | 5 | 5 | 4 | 4 | 1 | 0 | 0 | 19 |
| Alaska | 1 | 2 | 0 | 63 | 0 | 0 | 0 | 66 |
| Arizona | 21 | 5 | 1 | 6 | 1 | 0 | 0 | 34 |
| Arkansas | 7 | 5 | 0 | 4 | 0 | 0 | 0 | 16 |
| California | 61 | 54 | 24 | 19 | 6 | 1 | 0 | 165 |
| Colorado | 15 | 5 | 5 | 5 | 1 | 0 | 0 | 31 |
| Connecticut | 5 | 5 | 1 | 2 | 0 | 0 | 0 | 13 |
| Delaware | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| District of Columbia | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| Florida | 21 | 12 | 3 | 3 | 1 | 4 | 0 | 44 |
| Georgia | 13 | 1 | 15 | 1 | 1 | 0 | 0 | 31 |
| Idaho | 7 | 0 | 10 | 3 | 0 | 0 | 1 | 21 |
| Illinois | 13 | 37 | 16 | 6 | 2 | 1 | 0 | 75 |
| Indiana | 7 | 17 | 20 | 3 | 1 | 0 | 0 | 48 |
| Iowa | 14 | 16 | 14 | 3 | 0 | 0 | 0 | 47 |
| Kansas | 22 | 21 | 7 | 1 | 2 | 0 | 0 | 53 |
| Kentucky | 1 | 9 | 5 | 0 | 0 | 0 | 0 | 15 |
| Louisiana | 6 | 6 | 0 | 2 | 0 | 0 | 1 | 15 |
| Maine | 1 | 6 | 0 | 2 | 0 | 0 | 1 | 10 |
| Maryland | 1 | 7 | 2 | 3 | 3 | 0 | 1 | 17 |
| Massachusetts | 4 | 21 | 2 | 1 | 0 | 0 | 1 | 29 |
| Michigan | 28 | 16 | 2 | 4 | 3 | 0 | 0 | 53 |
| Minnesota | 10 | 6 | 3 | 2 | 0 | 0 | 0 | 21 |
| Mississippi | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 11 |
| Missouri | 8 | 8 | 12 | 3 | 0 | 0 | 0 | 31 |
| Montana | 14 | 5 | 8 | 5 | 0 | 0 | 0 | 32 |
| Nebraska | 8 | 8 | 12 | 0 | 1 | 0 | 0 | 29 |
| Nevada | 7 | 2 | 15 | 1 | 0 | 0 | 0 | 25 |
| New Hampshire | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| New Jersey | 4 | 17 | 2 | 4 | 1 | 2 | 0 | 30 |
| New Mexico | 12 | 4 | 2 | 8 | 1 | 0 | 0 | 27 |
| New York | 16 | 45 | 10 | 7 | 3 | 0 | 1 | 82 |
| North Carolina | 10 | 6 | 6 | 1 | 1 | 0 | 0 | 24 |
| North Dakota | 10 | 3 | 0 | 0 | 0 | 0 | 0 | 13 |
| Ohio | 12 | 43 | 18 | 8 | 4 | 0 | 0 | 85 |
| Oklahoma | 19 | 15 | 7 | 10 | 1 | 0 | 0 | 52 |
| Oregon | 16 | 6 | 19 | 4 | 0 | 0 | 0 | 45 |
| Pennsylvania | 10 | 47 | 28 | 7 | 1 | 1 | 0 | 94 |
| Rhode Island | 0 | 5 | 0 | 3 | 0 | 0 | 0 | 8 |
| South Carolina | 7 | 3 | 3 | 3 | 0 | 0 | 0 | 18 |
| South Dakota | 8 | 12 | 2 | 0 | 0 | 0 | 0 | 22 |
| Tennessee | 5 | 4 | 3 | 3 | 0 | 0 | 0 | 15 |
| Texas | 40 | 17 | 20 | 20 | 13 | 0 | 0 | 119 |
| Utah | 4 | 0 | 21 | 0 | 0 | 0 | 0 | 25 |
| Vermont | 4 | 2 | 0 | 0 | 1 | 0 | 0 | 7 |
| Virginia | 7 | 11 | 8 | 3 | 2 | 3 | 0 | 34 |
| Washington | 13 | 9 | 4 | 4 | 1 | 1 | 0 | 32 |
| West Virginia | 2 | 6 | 0 | 2 | 0 | 0 | 0 | 10 |
| Wisconsin | 17 | 25 | 7 | 3 | 0 | 0 | 0 | 52 |
| Wyoming | 10 | 1 | 13 | 2 | 0 | 0 | 0 | 26 |
| Totals | 550 | 564 | 354 | 240 | 53 | 14 | 7 | 1,782 |

THE SPRINKLING FILTER IN ACTION, AT RADBURN, N. J.

# Sewage Disposal in a Planned Town

***Problems of Design Simplified and Plant Built in Thirds***

HOW the sewage disposal problem may be solved in a planned town where the future population is rather definitely set, is being demonstrated at Radburn, N. J. This town, between Paterson, Hackensack and Ridgewood, is being built by the City Housing Corporation, a limited dividend company, for an eventual population of between 25,000 and 35,000 people. It is planned for a complete town with homes, apartments, business and industry and has already aroused interest in its unique street plan which separates pedestrian and vehicular traffic. Practically the entire town is in one watershed, this area being planned to house about 20,000 people. With this knowledge, the engineers for the disposal plant, Waring, Chapman, and Farquhar, could determine the most economical manner to build the plant for present and future requirements.

As far as it is practicable, the plant is being built in thirds—each third intended to take care of the needs of approximately 7,000 population. It was possible to determine what it was most economical to build now for full capacity and what could be built sectionally. For instance, the pump house is a permanent structure ample to house the pumps eventually needed for 20,000 population, but equipped at present with pumps enough to take care of only 5,000. One primary settling tank and filter bed are now in operation. The plan provides space for three tanks and beds in the future. One sludge tank and bed is now being used, although two are called for on the plans. Of two secondary settling tanks planned for the completed plant, one is now in operation. Screens are installed which can take care of the eventual maximum load.

The following is a brief summary of the stages in the sewage purification and disposal:

1. The screens remove any material in the sewage that is liable to obstruct the pumps.

2. From the wet well the sewage is pumped to the primary settling tank, equipped with a stirring apparatus, which scrapes the settled material to a sump at the center of the tank.

3. After passing slowly through the primary tank, the effluent flows over a weir and into a dosing tank fitted with an automatic siphon.

4. Periodically the siphon discharges the contents of

THE RADBURN SEWAGE TREATMENT PLANT

At right, sludge digestion tank; at left, intake, screen chamber and pump house; at extreme left, final settling tank

the dosing tank through a system of spray nozzles for aeration. The spray trickles down through the stone fill, which contains bacteria. The organic material is oxidized with the help of the bacteria.

5. The effluent passes by gravity flow to the final settling tank.

6. The oxidized material carried by the sprinkler effluent is deposited in the final settling tank, which discharges the cleared liquid to the main effluent drain.

7. The effluent is discharged into the Saddle River as a clear liquid, devoid of odor.

8. The settled material, in the primary and final settling tanks, is pumped once a day to the digester, where the sludge is broken up by bacterial action, accompanied by gasification. This gas is collected by a gas dome and burned. All putrefaction takes place in this airtight tank, thus eliminating odors around the plant.

9. The sludge, reduced in volume and completely digested, is discharged into the sludge beds, where it is dewatered. The dried sludge is removed and disposed of. It makes excellent fertilizer for meadows and truck gardens, owing to its high nitrate content.

The operation of the plant is automatic. Two men working in 12-hour shifts are the only supervision needed.

The sewer system works entirely by gravity flow. The average cut in laying the trunk sewer was 7 feet, and nowhere was more than a 10-foot cut necessary, nor was any fill required. It so happened that the most advantageous line for the trunk sewer from the standpoint of grade runs about through the center of the town-site so that all parts of the property are central to it.

The plant is located on the outskirts of the property near the Saddle River and about one-third of a mile from where the nearest residences will be when the town is completely developed. It is expected that this section will be kept permanently as a waterside parkway and that some of the land nearby will be used as a tree nursery. The plant covers about 4 acres and is about 700 feet off the main road. Flowers and shrubs have been planted by the men in charge. The plant is therefore not unsightly and, being absolutely odorless, will not detract from the proposed development of the territory.

# Evaluating Incinerator Bids

***Method of Handling Bids for the Red Bank, N. J., Plant in an Effort to Secure Lowest Ultimate Cost***

*By* **H. BURDETT CLEVELAND**
**M. Am. Soc. C.E.**
**Consulting Sanitary Engineer, New York**

THE low bid for the construction of a public utility is not necessarily the lowest bid when operating costs are considered. In the case of Red Bank, N. J., where a 50-ton incinerator is now under construction, the bids received were evaluated according to the guarantees of the various manufacturers and contractors. This is expected to result in the construction and operation of an incinerator under the most favorable economic conditions for this community.

For some years garbage and rubbish collected by the borough have been dumped on the river flats, but conditions of nuisance, aggravated by fires in the deep accumulation of rubbish, have been set up by this method of disposal, and for the past few years garbage has been delivered to and burned at an incinerator in a nearby community at considerable expense to the borough of Red Bank.

The Borough Council therefore requested the preparation of plans and specifications and advertised for bids for the construction of a building and chimney to accommodate two furnace units, each of a capacity to burn 50 tons of refuse in 24 hours. The contract calls for the installation of one 50-ton unit at present, which is to be operated 8 hours daily.

The borough is largely residential in character, with little manufacturing, but is a well-established trading center for a large district. For this reason the proportion of rubbish is very favorable to the incineration of mixed refuse without the use of auxiliary fuel. The population of the borough is about 12,000.

Careful consideration was given by the Borough Council to the matter of securing a suitable plant, and several existing incinerators were visited. Additional land was purchased at the present disposal site to insure economical foundation construction and to provide for a delivery driveway through the plant.

Detailed plans were prepared for the building and stack, and the specifications covered each portion of the work, including general specifications for the furnace and auxiliary apparatus.

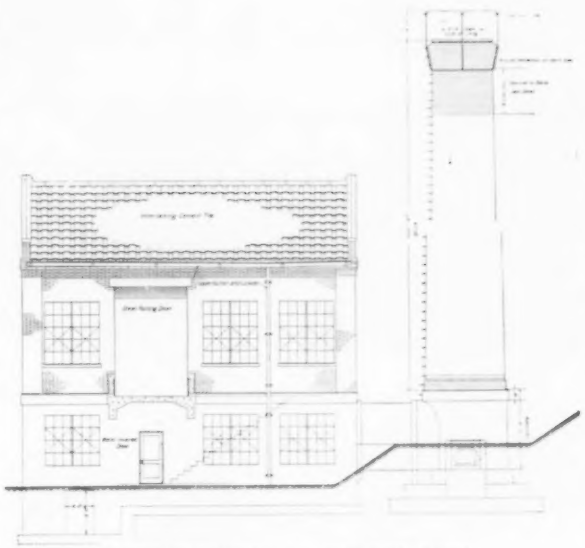
The plans and specifications were sufficiently broad to admit of free, open competition on a comparable basis, but called for strict guarantees accompanied by statements as to performance of the furnace on test after completion, covering labor and power requirements for operation, auxiliary fuel consumption for properly burning a standard mixture of garbage and rubbish of a definite moisture content, maintenance of proper heat in the combustion chamber, size and capacity of furnace and ability to effectively incinerate refuse at the rated capacity without nuisance, and other specified features.

With reference to auxiliary fuel consumption, the specifications and contract further provided that a specified sum should be deducted from the final payment, as liquidated damages, for each pound of coal or equivalent auxiliary fuel, above a certain amount, that should be required, per ton of refuse of the standard composition and moisture content, for proper operation of the plant.

Eight proposals were received for the construction of the plant, and the four lowest bids were evaluated on the basis of the guarantees accompanying the bids. Such evaluation took into account the annual operating cost as

well as the first cost and included also the expense to the borough represented by a longer time for completion in the case of three of these bids as incorporated in the proposal.

Among these four bids there was little differentiation with respect to labor costs for operation, and there was no differentiation, on the basis of the guarantees accompanying the bids, in the matter of auxiliary fuel consumption. Ratios of power required for operation of forced draft, which are consistent with the design and the operating arrangements and requirements of the furnaces, were as 1; 2.2; 3.5; 3.5.



SOUTH ELEVATION OF THE RED BANK INCINERATOR

The evaluation or translation of annual cost for power into equivalent first cost on a 15-year annuity basis resulted in the addition of $4,541 to two of the bids to place all bids on a comparable basis, and on this basis the contract was awarded to the Morse Boulger Destructor Co., at a price of $43,689 for the plant complete, with one furnace installed.

The very fact that refuse incinerator construction involves the use of proprietary apparatus makes it essential, in this field of public works construction, that a definite, comparable basis for bidding be set up by the municipality.

WILLIAM H.R.WHITE, Mayor
GEORGE K. ALLEN, Jr., Borough Engineer

## BOROUGH OF RED BANK
MONMOUTH COUNTY, NEW JERSEY
TABULATION OF BIDS RECEIVED SEPTEMBER 15, 1930
for the construction of a
## REFUSE INCINERATOR
(Capacity: 50 Tons in 24 Hours. Building to house additional future 50 Ton furnace)

H. BURDETT CLEVELAND
Consulting Sanitary Engineer
225 Broadway, New York

| BIDDER<br>1-Awarded Contract. 2-Evaluated for cost of power & time of completion | Lump Sum Bid | Grate Area (Sq.Ft.) | Drying Hearth Area (Sq.Ft) | Refuse to be burned per Sq. Ft. of Grate Area per Hour (Pounds) | Man-Hrs. of Labor per Ton of Refuse burned | Pounds of Coal required per Ton of Refuse burned | Power required per Ton of Refuse burned per Hour (Kilowatts) | Make of Chimney proposed | Temperature of Combustion Chamber guaranteed (Deg. F.) Min. | Ave. | Capacity of Drying and Burning Section (Cu.Ft.) | Capacity of Combustion Chamber (Cu.Ft.) | Area of Main Flue (Sq.Ft.) | Time for Completion (Days) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tuller Construction Co.<br>(Borge-Ellison)<br>Red Bank, N.J. | $41,700.<br>2 (46,241) | 90 | none | 50 | 1.0 | none | 2. | Kellogg<br>Custodis<br>Rust | 1250 | 1400 | Not Stated<br>Apparently<br>486 | Not Stated<br>Apparently<br>420 | 27 | 90 |
| Ransom & Anderson Co., Inc.<br>(Balmer)<br>New York City | 41,991.<br>2 (47,282) | 62 | Drying Bin<br>1656 cu.ft. | 70 | 1.0 | none | 2 | Ballard Sprague<br>Custodis<br>Kellogg | 1250 | 1400 | 418 | 1173 | 30 | 120 |
| Morse Boulger Destructor Co.<br>New York City | 1 43,689<br>2 (45,086) | 40<br>Total 152.5 | 112.5 | 60<br>30<br>38 | 0.96 | none | 0.573 | American<br>Kellogg | 1250 | 1400 | 994 | 388 | 31 | 95 |
| Nye Odorless Incinerator Corp.<br>New York City | 45,970.<br>2 (48,996) | 63 | none | 66 | 1.50 | none | 1.25 | Heinicke<br>Kellogg | 1250 | 1400 | 367 | 426 | 28 | 100 |
| Municipal Incinerator Co.<br>Buffalo, N.Y. | 47,934. | 90 | 50 | 70 | 1.04 | 40 | 4.4 | Kellogg | Not Stated | Not Stated | 705 | | 24 | 120 |
| Wilbur G. Hudson Corporation<br>(Superheater & Engineering Co.)<br>New York City | 50,500. | 74 | 45 | 56.5 | 1.50 | 20 | 2.9 | Kellogg | Not Stated | Not Stated | 567 | 572 | 32.3 | 100 |
| Pittsburgh-Des Moines Steel Co.<br>Pittsburgh, Pa. | 51,970. | 62 | 48 | 67 | 0.96 | none | 1.8 | Kellogg | 1300 | 1500 | 572 | 748 | 38.3 | 110 |
| C.O. Bartlett & Snow Co.<br>Cleveland, O. | 59,400 | 57.5 | 38 | 72.5 | 1.0 | 25 | 1.0 | Custodis | 1250 | 1400 | 585 | 460 | 26 | 120 |

### ALTERNATE BIDS

| | | |
|---|---|---|
| Morse Boulger Destructor Co.<br>Alternate No. 1 | 43,353. | Incinerator capacity and characteristics same as in main bid. Building essentially the same as in main bid except that facility for driving through building is omitted and a turning platform 38'x39' is substituted. Office and toilet room are located outside building and no coal bin is provided. Provision is made for future installation of a second unit in building. |
| Morse Boulger Destructor Co.<br>Alternate No. 2 | 42,453. | Incinerator capacity and characteristics same as in main bid. Flat roof building 22'x42' to house on 50 Ton furnace proposed. Facility for driving through building is omitted and a turning platform 39'x46'-6" is substituted. Building would require extension to house a second unit. |
| Nye Odorless Incinerator Corp.<br>Alternate No. 1 | 49,970. | Incinerator capacity and characteristics are practically same as in main bid except that furnace is circular in plan instead of rectangular and capacity of burning section is 410 cu ft instead of 367 cu ft as is stated for the capacity of the burning and drying sections in the main bid, and the capacity of each combustion chamber is 742 cu. ft instead of 426 cu. ft. Building is 33'-1"x48'-2", providing for the future installation of a second unit. Stack is 5' in diameter. An ash tunnel is shown. If ash tunnel is omitted price would be $47,470. |
| Nye Odorless Incinerator Corp.-Alt. No. 2 | 47,500. | Incinerator capacity 70 Tons. Building 28'-5"x36'-5". Circular furnace. |
| Nye Odorless Incinerator Corp.-Alt. No. 3 | 43,500. | Same as Alternate No. 2, except with rectangular furnace, presumably of 70 Tons capacity. |
| Municipal Incinerator Co.-Alt. No. 1 | 49,990. | Same as in main bid but with addition of a pre-heater. |
| Municipal Incinerator Co.-Alt. No. 2 | 42,128. | Flat roofed building, dimensions not shown but apparently 35'x55', with room for future additional furnace. Ramp as shown would not fit site but could be changed. Includes pre-heater. |
| Municipal Incinerator Co.-Alt. No. 3 | 32,028. | Flat roofed building 27'x35', to house one unit only. Includes pre-heater. Bidder's specifications to be followed in part. |
| Municipal Incinerator Co.-Alt. No. 4 | 36,331. | Flat roofed building, 26' wide, to house two units. Borough specifications to be followed. Does not include pre-heater. |
| Municipal Incinerator Co.-Alt. No. 5 | 27,331. | Flat roofed building, 26' wide, for one unit only, without pre-heater. Bidder's specifications to be followed in part. |
| Wilbur G. Hudson Corp.-Alternate | 46,200 | Building, 35'x42', similar to Borough plan, but with drive through omitted and no turning platform substituted. Chimney located north of building. |
| Pittsburgh-Des Moines Steel Co-Alt No. 1 | 49,250. | Building, 37'-8"x40', conforms to Borough plans and specifications except for size and secondary combustion chamber located outside of building. Common stoking space for present and future units. |
| Pittsburgh-Des Moines Steel Co-Alt. No. 2 | 47,100. | Building 31'x37'-8". Arrangement of furnace same as in main bid. Secondary combustion chamber outside of building. |
| Pittsburgh-Des Moines Steel Co-Alt. No. 3 | 45,200 | Building 31'x37'-8". Common stoking space for present and future units. Secondary combustion chamber outside of building. |

# Putting Imhoff Tank Sewage Sludge to Work on Farms

*By* CHARLES C. HOMMON
General Superintendent, Municipal Sewage Treatment Plant, Canton, Ohio

THE MAIN SLUDGE CHANNEL AND A LATERAL, CANTON SEWAGE FARM

THE disposal of sewage sludge in a satisfactory and economical manner is well recognized by the sanitary engineering profession as being one of the most difficult problems in the treatment of municipal sewage. The manner in which this phase of sewage treatment has been handled at Canton, Ohio, for the past few years is a radical departure from the commonly accepted practice and should be of interest because of its simplicity and practicability.

### The Canton Sewage Farm

The Canton sewage works is of the Imhoff tank trickling filter type. It was designed for a population of 135,000 persons, and it is estimated that approximately 100,000 persons are now contributory to the plant. It is located about eight miles south of the city, on what is locally known as the municipal farm, which is operated as a part of the sewage works and under the management of the plant superintendent. The farm comprises nearly 600 acres of rolling land, 200 acres of which are either wooded or too rough to permit of economical cultivation. Located on this acreage at advantageous points are three residences and barns, around which all agricultural activities of the enterprise are centered. Three city employees live in the three residences; they work mainly on the farm and care for the city-owned live stock and farming implements. All farm products are sold at the best market price, the money being turned into the general fund of the city of Canton. The common crops raised are wheat, corn oats, hay and potatoes.

As previously stated, the farm is operated as a part of the sewage treatment program, for the express purpose of providing a means of disposing of the sewage sludge.

### The Sewage Treatment Plant

The sewage plant is located near the middle and at the extreme western side of the farm, along the bank of Nimishillen Creek, a small stream into which the plant effluent is discharged. The sludge pumping equipment for transferring the wet sludge as drawn from the sludge wells of the Imhoff settling tanks to the farm land consists of two triplex 10- x 10-inch plunger pumps, powered by 40- hp., 220-volt motors, and approximately 5,500 feet of 6-inch force line. Each pump has a capacity of 300 g.p.m. operating at 30 r.p.m. The force line lies about midway between the north and south boundary lines of the city's property and terminates on the top of a knoll which is approximately 300 feet above the surrounding territory. From this high point the sludge flows in open ditches following the contours, to acreage as far as two miles. The ditches are formed usually by means of an ordinary farm breaking plow. The force line is also provided with suitable connections—6 x 6 x 3-inch tees—at points where it is desired to distribute sludge from time to time.

### Distributing the Sludge

At the time of pumping sludge onto the ground, three men are required for proper distribution. The spreading of the sludge is accomplished in the simplest manner, by keeping the open ditches at the highest elevations possible and allowing the ditch to overflow at proper intervals to cover the desired area. If all of the sludge is flowing in one ditch, there are usually three points of overflow, each man caring for approximately one-third. Owing to the sloping topography of most of the area, it is possible for the laborers to follow down the slopes in front of the sludge and, so to speak, fan it out by miniature ditches and dikes, and in this way cover relatively large areas from one point of discharge. Many observations have been made to determine the best condition of spreading the wet sludge, and it appears that there are but few choices, the most difficult condition being excessive slopes on hard, dry ground, devoid of any vegetation. Under these conditions it is difficult to retain the sludge on limited areas. Any appreciable amount of vegetation, however, retards the flowing sludge to a remarkable degree and renders it possible to cover satisfactorily relatively steep slopes. Likewise, snow during the winter months assists materially in spreading the sludge by retarding the flow. On ground that is relatively poor, or areas which it is desired to sludge heavily, it is best to first plow. The plowing not only loosens the ground, which permits of ready absorption of the contained water, but the small pockets formed on the surface by the plowing afford ideal catchment areas for the sludge. In the way of an experi-

ment, a part of the 1930 fall wheat crop was planted and then covered with sludge, the results appearing to be very satisfactory. The wheat in the sludged areas is much in advance of that in the unsludged areas. The same general scheme was tried with this season's corn crop. The dry weather was seriously interfering with the growth of corn, and wet sludge was applied to the ground about the time when the ears were being formed. When harvesting the crops it was quite noticeable that the area on which the wet sludge was placed yielded not only a larger quantity but a better grade of corn. On numerous occasions the value of the sludge as a fertilizer for grass has been well demonstrated, not only in a small way on lawns, but also on meadows, the hay from which was used as stock food.

### Knowledge of Crops Necessary

To use sludge properly, one should know something about the food requirements of the respective crops, the character of the soil, and the character of the sludge. For instance, it is well recognized that clover requires an alkaline soil, whereas, most sewage sludges are inclined to be slightly acid. It therefore follows that sludge is not a complete fertilizer for such a crop and requires the addition of sufficient lime to develop the proper reaction. Likewise, in the fertilization of oats with sewage sludge, one must apply the sludge sparingly, otherwise the growth becomes excessive and the crop is most likely to fall down before or soon after heading, and thus complicate harvesting of the grain.

### Areas Refertilized Every Four or Five Years

The length of time such a scheme, as above described, could be employed for disposing of sewage sludge from approximately 100,000 persons on the limited area was somewhat of a speculation in the early history of the plant, but experience has shown that for best results the acreage should be refertilized about every four or five years. This repetition, and the desire of abutting property owners for sludge to enrich their acreage, created by observing the results obtained on the municipal farm, have provided what appear to be unlimited areas.

In one instance, a farmer owning property adjacent to the city's farm, purchased a small centrifugal pump, which he operated with a Ford tractor and sufficient pipe to transfer the sludge across a valley to his acreage. He is well pleased with his investment, the only disappointment being that the city cannot supply him with sufficient sludge. As further indication as to how the agriculturists in the immediate vicinity of the plant feel regarding the use of sewage sludge in a wet form as a fertilizer, it may be stated that a number of farmers owning property some distance from the plant are now considering pooling their interests with a view to securing sufficient capital to purchase the necessary equipment for delivery of sludge to their acreage.

### Sludge Farming Aids Operation of Plant

The scheme of sludge disposal as employed at Canton greatly facilitates the operation of the sewage treatment works. It is believed that almost all sewage plant superintendents have experienced uncomfortable intervals by not being able to move sludge from the settling tanks when desired. It is well known that sludge digestion does go wrong at times, which causes serious difficulties in the proper operation of the sedimentation devices, and the one sure remedy for relief is removal of sludge from the tanks. Such sludge is always difficult to handle on drying beds because of the high organic content and inability to properly dry it. Such emergencies are easily met when the sludge is being disposed of in such a manner as employed at Canton. In the event that the sludge is poorly digested and likely to give trouble from obnoxious odors, it is always possible to flow it over areas sufficiently far removed from habitation so as not to give rise to complaints. In this connection, it should be mentioned that in many instances sludge has been distributed over quite large areas that were close to residential properties and public highways, and that no complaints from odors have come to the writer's attention. One probable explanation for the absence from odors is that the soil readily absorbs the contained water, thus leaving the sludge in a dry condition very quickly. On a number of occasions, land has been rather heavily sludged one day and cultivated the following day.

Another feature of the scheme that appeals to the writer is that sludge of low water content—a conditioning problem that is difficult and one that is desired where the sludge is to be handled on drying beds—is of but little or no advantage where the sludge has to be pumped. As a matter of fact, a sludge that contains more than 6 per cent solids is difficult to handle through a force line because of the excessive friction loss. This phase of the problem at Canton requires some watching because of the long force line and the excessive elevation to which the sludge is raised. There have been times when it was necessary to thin some of the heavier sludges either with water or with a more liquid sludge.

A PLOWED FIELD BEING COVERED WITH SEWAGE SLUDGE FROM THE CANTON SEWAGE WORKS

### Comparative Costs

The division of costs of operating the Canton sewage works does not permit of detailed accurate analysis to illustrate the merits of the scheme from an economical viewpoint. Rough estimates, however, indicate that the cost of placing the wet sludge on the farming acreage is no greater and perhaps less than the cost of removing

the sludge from drying beds. Other items of expenditure such as costs of constructing sludge drying beds and necessary appurtenances, maintenance, depreciation, and interest on investment, are believed to be much in favor of the scheme as employed at Canton. Sufficient net revenue is derived from the sale of farm products to more than pay the interest on the purchase price of the land. Another item that is significant, and one that is hard to estimate, is the increased value of the property due to the general building-up of the soil.

No doubt, sewage sludges vary greatly in their fertilizing value and will react differently when applied to the many different soils and crops, but the writer's experience, not only in Canton but elsewhere, has strongly indicated a general strengthening of the soil.

It is not the desire of the writer to place another burden on the shoulders of the sewage plant operator by suggesting that he become a farmer, as it is believed that he now has ample duties, but it would be unfair to say that the operation of the municipal farm has been anything other than a pleasure. Perhaps one thing that makes it a pleasure is the fact that an otherwise useless product is being turned back to nature and again placed in useful channels.

ACKNOWLEDGMENT.—From a paper read before the North Carolina Sewage Works Association.

# National Institute of Traffic Engineers Completes Its Organization

AT a meeting in the Engineering Societies Building, New York, on January 20, attended by about fifty engineers, the recently formed Institute of Traffic Engineers completed the final details of organization as a national body. The major portion of the morning session was devoted to a consideration of the constitution and by-laws, which as finally approved provide for three grades of membership, two of which are technical and one quasi-technical.

The two technical grades, Member and Associate Member, are open to qualified engineers upon application. To be eligible for admission to the grade of Member, the applicant must be not less than thirty years of age and have been in the active practice of engineering for ten years, five of which must have been in traffic engineering. A total of five years in responsible charge is required, two of which must have been in traffic engineering. Associate Members shall be twenty-five or older and have been in the active practice of engineering for eight years, of which three shall have been spent in traffic engineering, during one of which the applicant shall have been in responsible charge of work. Credit for engineering experience is granted for college work in much the same manner as is done by the founder Engineering Societies.

Election to Affiliate Membership is by invitation of the Institute and will be extended to a limited number of persons in other fields closely related to traffic engineering, who are cooperating with "traffic engineers in the advancement of their professional knowledge and practice."

At the afternoon session, addresses were delivered by Major John P. Hallihan, Chief Engineer, Detroit Rapid Transit Commission, on "The Economics of City Traffic and Transportation," and by John I. Knudson, Professor of Economics, Polytechnic Institute of Brooklyn, on "The Application of Economics to the Street Traffic Problem"; both of which are abstracted in this issue of THE AMERICAN CITY. Professor James W. Trimmer, of Carnegie Institute of Technology, delivered an address upon "The Economics of Motor Traffic and the Rural Highway."

Progress reports were submitted on behalf of the following committees by the chairman or a committee member:

Committee on Research—Chairman, Burton W. Marsh
Committee on Professional Curriculum—Chairman, Miller McClintock
Committee on Terminology and Nomenclature—Chairman, Guy Kelcey
Committee on the Evolution of the Art of Traffic Control and Regulation—Chairman, Earl J. Reeder.

In the evening a dinner was held at the Town Hall Club, at which Ernest P. Goodrich spoke on "The Application of Mathematics to Traffic Engineering," developing mathematically some of the more important factors having to do with the efficiency of street traffic control signals.

One of the most interesting of the day's discussions revolved around an acceptable definition of the meaning of traffic engineering, approval being given to the sense of the following definition: "Traffic Engineering as used herein is defined as the pursuit and determination of pertinent facts and scientific principles and the application thereof to the facilitation and control of street and highway traffic in the interest of safety, convenience and economy."

### Officers, Committee sand Members

The officers of the Institute, who constitute the Board of Direction, were elected at a meeting in the fall of 1930 and are:

Ernest P. Goodrich, President
Miller McClintock, Vice-President
Hawley S. Simpson, Secretary-Treasurer
Burton W. Marsh, Director
Guy Kelcey, Director

The Board met on January 21, and authorized the organization of the following committees, in addition to those already at work:

Library
Publications
Traffic and Transportation Economics
Standard Survey Methods and Forms
Standard Functional Traffic Signal Specifications
Standard Functional Specifications for Other Traffic Equipment
Fundamental Traffic Data
Intersection Treatment

The Board acted upon the various proposals submitted for the publication of the papers and news of the Institute and selected THE AMERICAN CITY as the most effective medium for this purpose. It was voted that the next meeting of the Institute should be held in Chicago about October 15, at the time of the National Safety Congress.

The Board elected the following to Affiliate Membership:

August Vollmer
Harold S. Buttenheim
W. Graham Cole
Miss Inez K. Rolph

The following were elected to Membership in one of the two technical grades:

Arthur H. Blanchard
William S. Canning
Robert B. Dodds, Jr.
Harold M. Gould
Maxwell Halsey
Thomas H. Healy
Harry H. Hemmings
John F. Hurley
A. N. Johnson
Allen W. Keller
Richard S. Kirby
John W. Leadley
Dean J. Locke
Irving J. Mack
Theodore M. Matson
I. C. Moller
Roger L. Morrison
William B. Powell
Earl J. Reeder
L. Segoe
Ira S. Shattuck
Arthur G. Straetz
Peter J. Stupka
Charles J. Tilden
Sidney J. Williams

# Improving the Ottawa-Sarnia Highway with Tar Penetration Macadam

*By* **R. M. SMITH**
**Deputy Minister of Highways, Toronto, Ontario**

THE Department of Public Highways of Ontario completed the paving of another 10-mile stretch of the Ottawa-Sarnia highway, in the county of York, last summer. Originally the Toronto and York Roads Commission controlled this section from Yonge Street, Toronto, to the Ontario County line. This section of the highway passes through a beautiful clay farming country.

Year after year the Commission built small sections of the highway with waterbound macadam pavement. This type of construction began in 1913 and continued until the highway was taken over by the Department of Public Highways of Ontario in 1926. The macadam pavement was well built but very narrow and with a severe crown. It was in the most part from 12 to 16 feet wide. The old macadam had been well maintained and was in a good state of preservation when work began this year.

In 1926 and 1927 the old base was widened to 16 feet and a 4-inch consolidated tar penetration macadam built on top of it, from Yonge Street easterly for 2¾ miles. This section was not touched in 1930 as the surface is in very good condition. It was built by the A. E. Jupp Construction Co., Limited.

### Poor Alignment Corrected

Little attention was paid during the early history of the Commission to dangerous jogs in the alignment. The Department of Public Highways of Ontario has removed all these dangerous corners by purchasing property and rounding the corners. Corners at the second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth concessions and the York-Ontario Town line were well rounded, and the curves were given the proper super-elevation.

These diversions were quite extensive in the amount of work involved. At the second concession a small bridge had to be extended and the fill widened. At the sixth, Unionville, a 42-foot span, T-beam concrete bridge was extended and a comparatively large fill made. The greatest improvement in alignment and grade were made east of Unionville and at Markham. At Markham a new 20-foot culvert was built and a large fill made. Several buildings were removed. This improvement eliminated a very dangerous turn at the foot of a hill on the main street of Markham.

Immediately east of Unionville a dangerous winding highway was eliminated by moving the course of the small creek several hundred feet northerly. The highway used to follow the stream, but now it runs straight. This fill improves the entrance to a 40-foot bowstring arch concrete bridge. The old riverbed was filled and the new pavement location was graded with the material from the new creek diversion. The fill was about 1,000 feet long.

TOUCHING UP WITH ¾-INCH STONE DURING THE ROLLING AFTER THE FIRST APPLICATION OF TAR

### Laying the Tar Penetration Macadam

The old macadam pavement was scarified, reshaped, realigned, and widened to 20 feet. In many places it was greatly strengthened. On the top of this newly shaped base a 3-inch consolidated tar-penetration macadam surface was laid. The surface was built according to Department of Public Highways of Ontario specifications. Work was carried on in several sections at once. This was possible owing to the four railway sidings available over the whole section. Under no consideration was traffic interrupted.

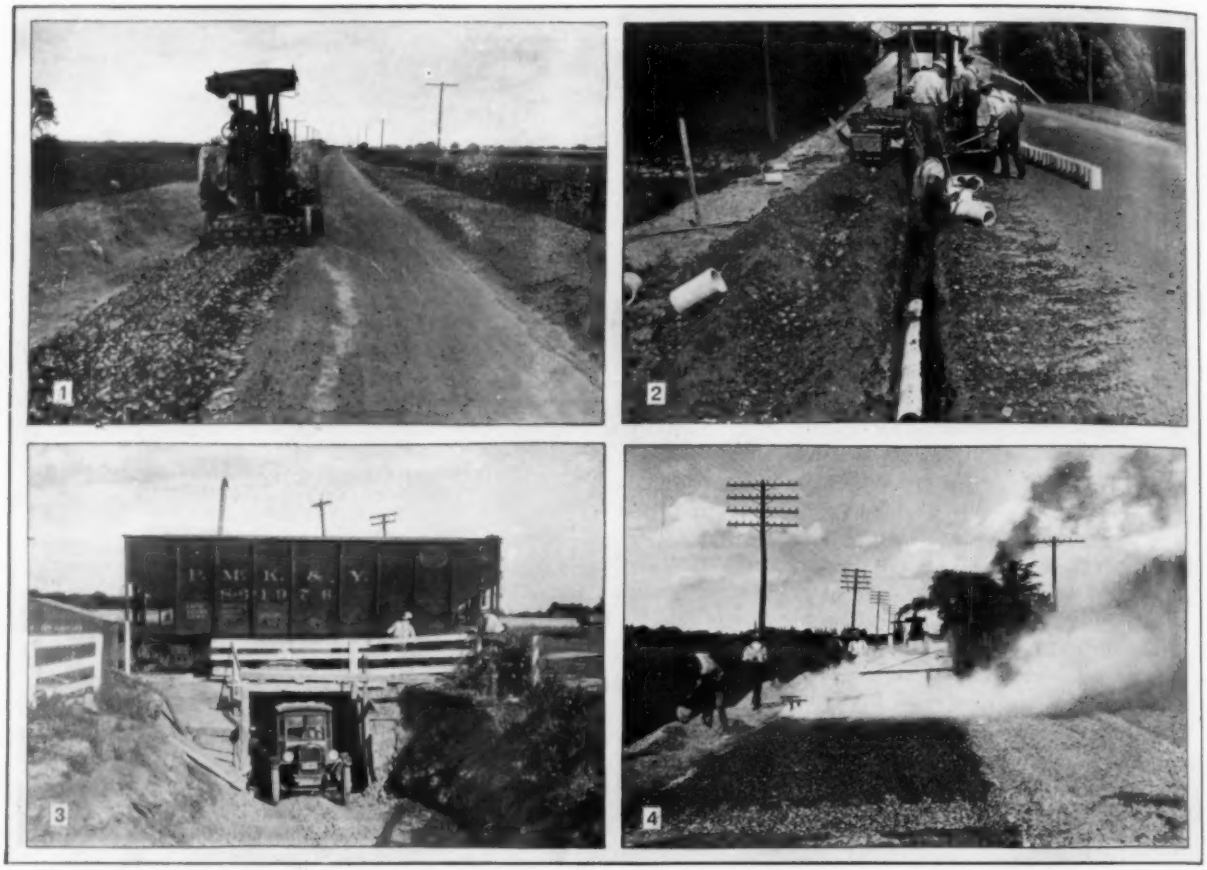
Full width of 2-inch stone was laid, but only one-half was penetrated at a time, thus allowing traffic to use the highway while under construction. One-and-a-half gallons of tar were used per square yard of surface for penetration. Upon this was placed sufficient ¾-inch stone to fill the larger voids. Rolling followed with two 10-ton rollers until no movement was noticeable in the stone. To this was applied ½-gallon of tar per square yard and about 20 pounds of ⅜-inch stone per square yard. Rolling and sweeping with a steel broom attached to the roller continued until all was thoroughly consolidated.

It was thought essential to allow as much traffic as possible over the pavement before the surface treatment was applied. This treatment consisted of ¼-gallon of tar per square yard and 20 pounds of ⅜-inch stone chips per square yard. The finished pavement has the appearance of sturdiness and permanence. It is smooth and has very fine riding qualities.

### Special Surfacing

In several sections a one-inch depth of fine Tarvialithic surface was placed upon the penetrated and sealed macadam. The Tarvialithic is a new product of the Barrett Co., Limited. It is prepared at Dundas and transported ready-to-lay in cars. This surface is spread by trucks and raked by hand. It is consolidated by the usual 10-ton power roller. No surface treatment is necessary when this material is used.

The whole work was done by the A. E. Jupp Construction Co., Limited, Toronto, and directly under the supervision of J. R. Bell.



PREPARING THE GRADE AND LAYING THE PENETRATION MACADAM NEAR UNIONVILLE, ONTARIO
1. Scarifying the old road surface on Highway No. 7, west of Unionville. 2. Preparing a trench with a tile drainage machine and installing the tile. 3. The loading device for crushed stone at Markham, Ontario. 4. Hand casting the ¾-inch filter stone over the freshly applied tar

## Sound Regulations for Municipal Borrowing

THE regulations laid down in the laws of New York State for cities wishing to borrow money were outlined and praised by Comptroller Lawrence J. Ehrhardt, of Albany, N. Y., in the third radio talk of the series recently undertaken by the New York State Conference of Mayors and Other Municipal Officials, in conjunction with the Schenectady Bureau of Municipal Research. He said in part:

"A city cannot borrow in excess of an amount equal to 10 per cent of its assessed valuation except for water-supply purposes. It cannot even issue temporary loans except in anticipation of collection of taxes and for the purposes for which the taxes are levied. The loans must be paid out of the taxes for which they were made. Temporary loans are permissible to finance permanent improvements during the period of acquisition and contract. Notes and certificates of indebtedness issued for this purpose cannot bear interest exceeding 6 per cent and must be paid within six months. In addition, they must be paid and refunded from the proceeds of bonds in anticipation of the sale of which they were issued.

"In issuing bonds for a special object or purposes definitely expressed in the ordinance or resolution, authorization of the issue is permitted only when it is approved by two-thirds of the elected members of the governing body.

"Cities are authorized to incur debt for any public or municipal purpose, but they are subject to the limitation that no bonds may be issued to pay for the maintenance, repairs and current expenses of administration. They may be issued for capital improvements or for the refunding of bonds the redemption of which has not been provided for at maturity. The term of the bonds may not exceed the probable life of the improvement for which they were issued, and in New York State only serial bonds can be issued.

"The soundness of borrowing policies of New York State municipalities is shown by the fact that the cities have experienced no difficulties in selling their bonds and obtaining a favorable rate of interest or premium, that no city of the Empire State has ever defaulted upon any of its bonds and that none has earned a reputation for slow payment."

# Finding and Using the Funds to Make City Planning Effective—II

*By* COLEMAN WOODBURY
**Research Associate in the Institute for Economic Research, and Assistant Professor of Economics at Northwestern University**

TWO standards have been in quite common use in determining which municipal expenditures should be carried by borrowing: (1) the permanence of the improvements for which the funds are spent; and (2) the extraordinary, non-recurring character of the expenditure. In questions of city plan finance these are but two sides of the same idea. The comparative permanence of the improvements makes expenditures for them non-recurrent. The common result of adopting this handy means of determining borrowing policy has been to encourage borrowing and to blind many cities to the possibilities of current financing.

These standards have a certain usefulness and they probably apply more satisfactorily to small than to large cities. *As a complete guide to borrowing policy, however, they are often very misleading.* In the first place, the physical life of an improvement usually extends over a long period. Its useful or economic life, however, is often much shorter. It may become out-of-date and have to be replaced—for example, many school and park buildings; it may, in the course of time, become inadequate and require additions and supplementing—e.g., park areas, or major highways. Failure to see this difference clearly has led too many cities to *underestimate future needs for improvements* and therefore, quite unintentionally, to tie the hands of later city officials by many long-term bond issues. In other words, when the time comes to replace obsolete improvements and to add to inadequate ones, the bonding power is nearly exhausted by past improvements, including the very ones which are now in need of replacement, remodeling, or supplementing. A headlong policy of borrowing based on the apparent permanence of improvements often is poor economy over a period of years.

### How Permanent Is Permanence?

Closely allied with this error is that of issuing bonds for as long a period as is possible. The estimated useful or economic life of an improvement is obviously the *maximum* period for which bonds should be issued. Too many times, however, the movement, relying on the catchwords "permanence" and "non-recurring character," is decidedly toward making it the *usual* period of the loans. This is unfortunate for two main reasons:

First, this measure has been so easily applied that it has blinded people to many other conditions which should help determine the length of the loan. Without discussing them, we may mention the condition of the investment market at the time the issue is floated, both as to interest rates and as to length of bonds preferred; the rapidity of growth of the community; the financial ability of the city to pay off the loan in a shorter time; the uncertainty of the future of the city; the need for conserving future bonding power for such major projects as grade separations and track elevations; and the number of long-term bond issues already sold by the city.

In the second place, when the term of the bond issue and the useful life of the improvement coincide, the debt for this purpose is not reduced. In an everyday phrase, the city isn't "getting ahead." The sinking-fund will repay the bondholders, but a new loan is necessary for the improvement that is to replace the old one. This may be justifiable in some cases, but the perpetual character of the debt must be realized. If the term is shorter, the city has some margin, a period in which attention may be given to other short loans without "freezing up" the municipal credit for a long term. Both Illinois and Wisconsin limit bond issues to 20 years, although Wisconsin makes an exception in the case of Milwaukee. This is probably wise, but still shorter terms should be considered whenever possible, and occasional long terms are probably advantageous under some circumstances.

### The City's Physical Equipment as a Gigantic Unit

The third serious weakness of the common borrowing policy is that it focuses attention on individual improvements and not on a planned series of projects. Every public improvement is, in a certain sense, unique and non-recurrent. However, if the physical equipment of a city which is publicly owned and operated is looked upon as a unit, as a gigantic plant for providing freedom of movement, the means for recreation, education, and certain direct public utility services to the inhabitants, many of the smaller plan projects are seen to be merely minor "patchings," reenforcements, and replacements which are going on *year after year.* For example, the cost of a street-widening, the breaking of a "bottle-neck," the eliminating of a bad curve or a jog, the extension of a street not properly laid out by the original subdivider, may seem at first glance to be non-recurring expenditures which should be taken care of out of borrowed funds. But a comprehensive survey of the city will probably show a score or more of such minor jobs which must be attended to as time goes on. If the current budget is not too overburdened, these minor improvements should be considered as units in a recurring series and paid for out of current receipts from year to year. The larger and the more rapidly growing the city, the more items of this nature should be financed without borrowing. All cities, however, should keep the idea in mind when deciding on a borrowing policy. *City planning, by regularizing and scheduling improvements, should increase the number of projects which can be financed in this way.*

### Better Balancing of Borrowing

An appreciation of these shortcomings in the prevalent debt policies of cities should make for a better balancing

of borrowing and expenditure from current receipts. Another method which has recently been advocated in a very able discussion of public borrowing (Paul Studensky: "Public Borrowing," National Municipal League, 1930) deserves consideration. A *normal ratio* of expenditures for improvements plus debt charges to total cost of the city government is selected. This usually would be the average ratio of the city in question over a period of years. [Presumably it might, however, be the average ratio for a *group* of cities or a more or less arbitrarily chosen ratio.] Borrowing would be resorted to only for that portion of the annual improvement cost which was above the figure set by the normal ratio; if the yearly cost were below this amount, no borrowing would be done in that year. In the words of the writer (pages 127-128):

"...the proportions in which the municipality or state would borrow in addition to taxation will be gaged by the extent to which the year's expenditures for permanent improvements plus debt charges, exceed the normal ratio. The exercise of the borrowing powers will be automatically controlled. If expenditures continue at a high level, the normal quotient would rise accordingly and, step by step, would restrict the borrowing powers. A rapid fall of these expenditures and their continuance at a low level would have the reverse effect. At first, borrowing might be restricted; next, as the expenditures continue at a low level, a low normal quotient would be established; then, as the expenditures rise above that quotient, borrowing would again be resorted to. Thus the borrowing powers would be automatically released or withdrawn in accordance with the changes in the year's level of expenditures, as well as in the normal level.

"Under this plan, the authorities would obtain an elastic, moving standard which would truly represent the normal trend of development of government at all times, and which would indicate, at any given time, to what extent the expenditures deviate from the normal."

This plan has certain obvious merits. The most apparent weakness is at a vital point, the determination of the normal ratio. If a city has been following a hit-or-miss improvement policy for a period of years, its average ratio may be a none too reliable regulator of present and future borrowing. Of course, as pointed out, the normal ratio is elastic, yet it will change slowly, and the longer the period for which the ratio is computed the more slowly will it change.

EDITORIAL NOTE.—The foregoing is the second of a series of articles by Professor Woodbury on the interrelationship of city planning and municipal finance, the first of which appeared on pages 135-136 of this magazine last month. A third instalment will appear in the March number.

# The Cul-de-Sac Idea Applied to Protected Residential Areas

*By* **EDWARD T. HARTMAN**
**Consultant to Planning Boards, The Commonwealth of Massachusetts**

NINETY-NINE per cent. plus, of all land developers today erect their superstructure without a proper foundation of site planning. Let the exceptional developer propose a glorified cul-de-sac, so as to provide an area fit for homes and safe for children, and the town officers will probably tell him that every street must be a through street.

Isn't it time to consider the pattern of the "town for the motor age"? Radburn has made a distinct contribution. Her system of walks for communication within the district is sound. There is probably room for questioning the perfection of the 18- or 20-house cul-de-sac opening directly upon a main highway. That is the question I desire to raise.

## On or Off the Main Highway

Some years ago I was asked to discuss the question of "The Future of the Main Highway." I was given three minutes. I replied, in effect, that I was not concerned about the highway itself, but that the utilization of the land along the highway was a serious matter. It could not all be used for business and industry. Except for properly located and arranged business and industrial areas, the land should be used for agriculture or forests. Where dwellings were needed, no dwelling should face on the highway, but at intervals there should be trap-doors, intended only for those who lived in the area or had business there, by which one could enter into a glorified cul-de-sac, through which one could go nowhere except to the homes and neighborhood institutions within the area; and that a buffer along the highway should be made up of forests, parks and playgrounds, or a strip of garden or farm land. I have never found reason to change this point of view. Benton MacKaye gets at it through another approach, his "townless highway." He argues that the modern hell-bent-for-election highway is more dangerous than a railway and we should treat it accordingly.

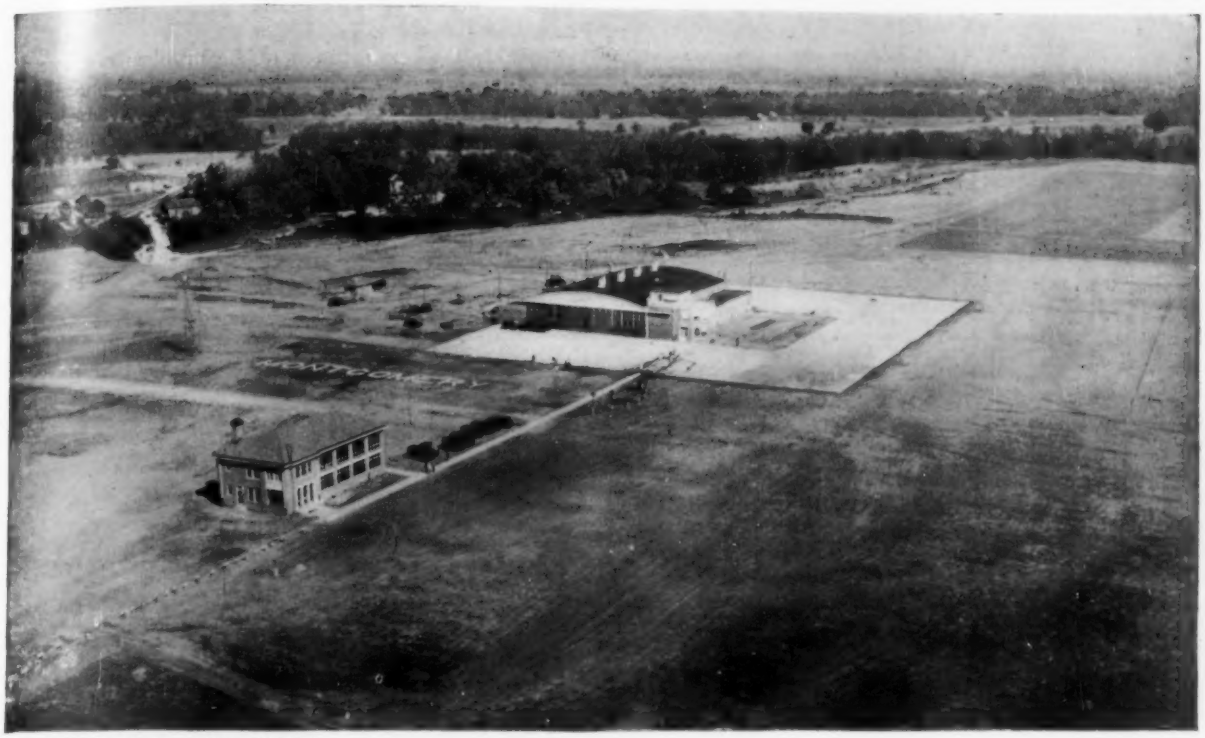
What people are seeking today is a home where they may be assured of quiet and safety for themselves and their children. Such conditions are not insured on a road that may become a main highway; they must be provided by developing a home district through which no main way can ever go. This means the adaptation of the cul-de-sac or closed-end street idea into a detached system of streets, surrounded by a barrier impenetrable by all except those who belong inside. There seems to be no other way.

## The School District as a Unit

In this matter we are still in the academic stage, the discussion stage, except for a very few experiments. It is time to raise the question of the proper size of this glorified cul-de-sac. To open the question, I propose the school district as the proper size. A proper school takes care of about 25 pupils per room. A 16-room school is an economical unit. Therefore, a home cul-de-sac should be planned for 400 children. The number of families would vary, but could be fairly well predicted, according to the type of development. Let's put it at one school-child per family, therefore 400 families. With one-third of the land for public uses and 6,000 square feet for a desirable type of cottage development, this home district would contain around 85 acres. Will it work, or will the people like a twin cul-de-sac better? This would provide a main entrance for each 40 acres, more or less.

What does anybody know about this? Something is going to be done. The sooner we get about it, the better. There is already evidence that protected (blanketed, isolated, hidden) lots sell better than where the grind and whiz and honk, the dust and gas, of automobiles are present. Will a man go a half-mile from a main highway to reach a home in a protected area? He probably will. He is going further now, and finding no protection.

There are other elements but they will not be discussed here.



*Photograph by Air Corps, Maxwell Field*

THE MONTGOMERY MUNICIPAL AIRPORT

# Profitable Management of the Small City Airport

*By* **L. G. MASON**
**Manager, Montgomery Airport, Montgomery, Ala.**

IT often happens that a city creates an airport with funds provided during a momentary burst of public enthusiasm, entirely overlooking the fact that money will also be needed for maintenance or the airport will soon be useless.

Building an airport does not mean that aviation activities will automatically be attracted to it. Such is seldom the case, and the first few years in the life of an airport are likely to be the most difficult. It is then that a municipality should guard against entangling commitments or concession rights which, over a period of time, may be found extremely detrimental to the growth of the airport. What may be fair to the concessionaire today may not be fair to the city tomorrow. It must be realized that a municipal airport in its initial stages of development and use will not be self-supporting, and will have to be subsidized or financed by the city for a year or two. After the field becomes the home of ten to twenty privately owned ships and becomes the terminal or station for one or more air mail or transportation lines, it should be self-supporting.

### The Manager

The selection of the airport manager is a matter of great importance. The manager should be a young business man, from twenty-five to thirty-five years of age, experienced in sales organization work and deeply interested in aviation, though he need not be a pilot. He should be well educated, have a pleasing personality and preferably be known in the community socially. The manager should have absolute authority over the airport, and it is his duty to keep it in a well-ordered, clean and safe condition. He should promote the airport, and aviation in general, by maintaining personal contacts with business men in the community, by radio talks, newspaper publicity and by any other methods he can evolve. The expense of the advertising should be borne by the city. The salary at which a man can be procured will vary from $200 to $500 per month, depending on individual qualifications and the size of the airport. I advise the employment of a man at the minimum rate, giving him in addition certain of the field concessions, the profits from which will amplify his salary.

Besides the field manager, an airport needs one or two day laborers for grass cutting, maintenance of buildings, etc. These men should be under the control of the manager and should be paid by the city, which should also assume the expenses of lighting, telephones and other incidental maintenance requirements.

### Means of Revenue

The city may count on four methods of obtaining revenue from its airport; these in time will more than take

TICKET STATION, MONTGOMERY AIRPORT

care of the current monthly expenses. The first of these four methods is the subletting of gasoline and oil rights, preferably to the airport manager. He in turn might sublease the gasoline rights to the field to some large nationally known oil company on the basis of a rental charge of one or two cents per gallon off their profit. For his concession the manager could logically pay a tax of two or three cents per gallon sold out of his profit. By making the fuel requirements of the airplane business determine the major part of the taxation, I feel that an equitable distribution of the taxes will be paid by the plane operators. State legislation should make it possible for a city to obtain, for assistance in maintaining its airport, the state gasoline tax which is collected through the sale of gasoline to airplanes at the municipal airport.

A second method of obtaining revenue for the support of an airport is to charge commercial operators a percentage based on their ticket sales. These percentages may vary slightly, but I have found the following to be representative of fair practice:

1. Local taxi concerns, 10 per cent
2. Transportation companies, 5 per cent
3. School instruction tickets, 5 per cent

A third form of revenue vital to an airport is derived from the various amusement concessionaires, the hotel and the dining-room. It is hard to set any definite figures for these items, as much depends on the size of the city and the popularity of the airport. A rent based on 10 per cent of the gross receipts of the amusement concessionaire features, and 5 per cent of the gross for the hotel and dining-room, will give average figures.

The municipal hangar should also provide revenue. The hangar and the workshop might be operated directly by the city, but in general this practice would not prove ultimately satisfactory, as the airplane industry is a highly specialized business and should be supervised and managed by the most experienced personnel. A far better solution, in my estimation, is to have the city lease its hangar and workshops to an individual, such as the airport manager, or to a corporation, requiring sufficient financial backing and sufficient aviation experience to ensure the installation and maintenance of proper aviation servicing tools and equipment to care for the home and visiting ships. A suitable rental for this concession would be an assessment of 25 per cent of the gross charges collected from plane operators for storage.

It will be seen from my recommendations with regard to methods of deriving revenue from a new airport that I advocate the percentage method of assessment. I feel that this is more equitable both to the operator and to the city during the period when the local aviation industry is in its infancy.

Probably the best solution of the problem of successfully inaugurating a new municipal airport, but one which is often not possible, is to place the field in charge of a man who, besides having business and aviation experience, can also obtain the necessary financial backing to establish a complete operating company on the airport. Such a company needs a capital of approximately $50,000 to cover adequate ships, tools, and stock equipment. An arrangement of this kind relieves the city of all operating details connected with the airport. The manager, although receiving a small salary from the city, will naturally bend every effort to promote the flying end in which he is financially interested and from which he will ultimately derive the bulk of his income. At the same time the city is assured of an income based on a definite percentage of the manager's business.

# The Preparation of Model Ordinances and Codes

THE New York State Conference of Mayors and Other Municipal Officials prepares five model ordinances a year, on subjects selected after a study of the requests received during the previous year for copies of ordinances. The Bureau of Municipal Information, established by the Conference in 1915, has on file all ordinances of New York State cities and the principal municipalities in other states. Because it was observed that many cities have several ordinances on the same general subject, each dealing with one or two special regulations, the Mayors' Conference ten years ago undertook the preparation of model ordinances in the hope that interested municipalities would adapt them to their uses and avoid the cost and confusion resulting from piecemeal legislation.

Two policies are strictly adhered to in drafting the ordinances, 54 of which have been prepared to date, according to William Parr Capes, Executive Secretary of the Conference. "First," stated Mr. Capes in a paper on "Preparation of Model Ordinances and Codes presented at the convention of the American Municipal Association in November, "no effort is made to prescribe the machinery for the performance of the duties or the enforcement of the regulations outlined in the proposal. The ordinance is so drafted that the legislative body can easily designate in it the kind of administrative machinery it desires to set up. Secondly, the model is made just as complete and drastic as possible so that when a municipality is discussing the problem, it will have in the proposal before it all the facts that it needs. Changes in the model can easily be made to meet any local conditions or to comply with the wishes of any administration and local need as to the effectiveness of the regulations required."

In preparing a model ordinance the Conference studies all the ordinances on the subject obtainable and prepares a first tentative draft of the model, containing all the different provisions found in the ordinances examined. State laws and court decisions relating to the subject are then studied. A second tentative draft is prepared, from which are eliminated all provisions of the first draft which conflict with state laws and which are contrary to court decisions. This second draft is next sent for criticism to the best experts available. The draft, revised if necessary, is then submitted to a special committee appointed by the President of the Conference, which usually consists of three corporation counsels. A meeting is held if any division of opinion develops in the committee as a result of correspondence. After the committee unanimously approves the model ordinance, it is sent to the mayor of each city and first-class village in the state for their use if desired.

Model codes are drawn up by a committee representing the state department which supervises the particular municipal activity, and the Mayor's Conference, usually assisted by an expert who is compensated for his services. A model housing code and model plumbing and sanitary codes have been prepared.

# Road Construction in Newfoundland

*By* EDWARD A. DOW
American Consul General,
St. John's, Newfoundland

THE APPROACH TO A TYPICAL FISHING VILLAGE OF NEWFOUNDLAND
An iceberg is seen in the distance

THE government of Newfoundland is giving considerable attention to highway construction. While the work of the Newfoundland Highroads Commission has so far been largely confined to road construction on the Avalon Peninsula, it is believed that, owing to the increasing use of motor vehicles and the demand for better roads, it will gradually extend its activities to other parts of the island.

At the 1929 session of the Newfoundland Legislature, it was decided to place the Highroads Commission under the control of a Minister of the Crown, responsible to Parliament. The Highroads Commission Act was therefore amended and the Minister of Public Works appointed Chairman of the Commission and Chief Commissioner, with all roads and bridges not formerly handed over to the Commission to be under the care of his Department. Thus the entire responsibility of the roads and bridges throughout the Dominion was consolidated.

### Road Mileage by Types

With the exception of the main roads on the Avalon Peninsula, very little attention has been given to the construction of highways in Newfoundland. The Avalon Peninsula covers an area of approximately 4,000 square miles, or about one-tenth of the total area of Newfoundland, which is 42,000 square miles.

On December 31, 1929, there were 731 miles of highway in Newfoundland suitable for motor-vehicle traffic. During the calendar year 1929, a total of 111 miles of highway was constructed. In 1925, there were 130 miles of highway at the close of the calendar year; in 1926, 345 miles; in 1927, 425 miles; in 1928, 620 miles; and in 1929, 731 miles.

The highways are constructed of earth and gravel and then oiled. A few miles of roadway are surfaced with waterbound macadam. About one mile of the principal business street in the city of St. John's is paved with granite blocks. No other paving is laid in Newfoundland.

### Experimental Work

The Highroads Commission is experimenting with various oils over short lengths along the highways. For the macadamized roads a heavy tar oil was used on short stretches of roadway in 1927 at the rate of ⅛-gallon to the square yard. The result for the season was not unfavorable, except for a stretch on a roadway in St. John's where the heavy bus traffic soon broke up the thin layer.

After the winter of 1927-28 not much of this tar oil was to be seen when the frost had left the ground. A few patches were still intact, and the fact that some of these patches were still visible at the end of 1929 proved that a heavier layer of the tar would have been far preferable.

In 1928, a road 450 feet long and 8 feet wide was given a single coat of light oil, using a little more than 1/5-gallon per square yard, and 210 feet of road 8 feet wide was coated with heavier tar oil, using 1/3-gallon per square yard. At one place 1/9-gallon per square yard was used, and at another 2/9-gallon only as a dust-laying experiment.

As far as could be judged during the season, the heavy tar oil gave the better results. The 1/9-gallon per square yard application did not last, and the 2/9-gallon application had little more effect than an application of a half-pound per square yard of calcium chloride. (The gallon referred to above is the Imperial gallon, equal to 1.2 United States gallons.) Of these experiments, 1/3-gallon

A TYPICAL SECTION OF THE HIGHWAY ON THE MAIN ROAD FROM ST. JOHN'S TO NEIGHBORING CHIEF OUTPORTS OF EASTERN NEWFOUNDLAND

A CONCRETE BRIDGE IN THE CITY OF ST. JOHN'S

application of heavy tar oil was the only one of any real use.

During the last few years the Commission has been experimenting with calcium chloride as a dust layer on the highways. It has been found excellent for this purpose, using applications of one pound per square yard, early in the summer. It has been found preferable to allow the roads to become a little dusty in the late summer or early autumn rather than to give them a second application, since a late application of calcium chloride before the rain falls helps to prevent the formation of potholes. The summers in Newfoundland are too short for two solid applications, and light applications with calcium chloride flakes are too expensive and require too much labor for the short time they last.

### Finances

The Commission operates on a budget basis for highway construction and maintenance of bridges and their construction. There is, however, no budgetary control of local grants given annually to the 45 district members of the Legislature who distribute, with the nominal advice of the Highroads Commission, outlays of money for local road and highway improvement.

With the exception of fees received from taxes for registering motor vehicles, and issuing licenses and drivers' licenses therefor, and from fines collected for failure to register vehicles or obtain licenses, the Highroads Commission is dependent upon the annual Government appropriations for carrying on its work. The total amount received by the Highroads Commission from the Government during 1929 for the construction and maintenance of highways and bridges was $1,112,667. The budget from the Newfoundland Government loan amounted to $1,040,009. A Government grant of $30,016 was also obtained, and $42,641 was appropriated for relief work, the object being to employ men who were out of work. During 1929, on account of the poor fishing season, the Government found it necessary to come to the assistance of the fishermen and chose this as a method of relief. A weak point in this system is the difficulty of finding roads requiring repair in the vicinity of the regions where unemployment prevails.

The fees for registering and issuing licenses and driving licenses to motor vehicles amounted to $55,831, out of which, in accordance with the terms of the Traffic Act, $13,820 was remitted to the Municipal Council of St. John's. Contributions amounting to $1,354 were also made for road improvements in Twillingate and Grand Falls. The fines for breach of the Traffic Act amounted to $1,433.

During 1929, the Newfoundland Commission registered 2,141 passenger cars, 357 motor-trucks, 93 motorcycles and 12 motor-busses, making a total of 2,603 motor vehicles. Licenses were granted to 3,180 drivers, 11 manufacturers' agents, and 43 garages.

During 1930 the Newfoundland Commission registered 2,506 passenger cars, 510 motor trucks, 11 busses, and 97 motorcycles, making a total of 3,124 motor vehicles. Licenses were granted to 3,810 drivers, including 818 chauffeurs. The latter group includes both car drivers and those hired by firms or families.

### New Construction

During 1929, a total of $869,179 was spent on the construction, extension and improvement of the principal roads in Newfoundland. The cost of this work on 201 miles was $503,850. The average cost per mile ranged from $300 to $12,000. In addition to this amount, $335,428 was spent on other road work; a street in St. John's was improved at a cost of $15,333, and the cost of work on a road on Bell Island amounted to $14,568.

The cost of inspection and maintenance of highways during 1929 amounted to $109,772. A total of 98 miles was maintained at less than $100 per mile; 94 miles at a cost from $100 to $200 per mile; 172 miles at a cost of $200 to $300 per mile; and 106 miles at a cost between $300 and $451 per mile. The average cost per mile was $234.

### Bridges

During 1929 a total of 20 new bridges were built, and 35 were temporarily repaired. The total cost for bridge construction was $52,240, which was $2,773 less than the amount estimated for this purpose.

### Concrete Culverts

During 1929 a total of 5,675 lineal feet of concrete pipes for culverts varying in diameter from 6 to 24 inches, was manufactured near St. John's. The following pipes were made:

| Length Feet | Diameter Inches | Cost of Concrete Culvert Pipes per Foot |
|---|---|---|
| 377 | 6 | $ .20 |
| 2,103 | 12 | .50 |
| 1,007 | 15 | .60 |
| 855 | 18 | .81 |
| 615 | 21 | .93 |
| 817 | 24 | 1.43 |

## General Mortality Rates Make a Better Showing

A DEATH rate of 11.9 per 1,000 estimated population is indicated for the 52-week period ended December 27, 1930, for the 81 leading American cities covered by the Weekly Health Index of the Division of Vital Statistics of the Bureau of the Census. The corresponding rate for the same cities for the calendar year 1929 was 12.6.

An even more satisfactory reduction is shown in infant mortality rates for the same cities. The estimated rate for 1930 is 58, as compared with 64 for the previous year. One fact very apparent from an inspection of the figures for the individual cities listed in the Weekly Health Index, is the need for increased attention to problems of infant mortality among the colored population. Several cities reporting infant mortality rates separately for white and colored, show rates for the latter in excess of 100, and in one case this figure for deaths of colored children under one year of age is 147 per thousand live births.

# Effective Publicity for the City Government at Minimum Cost

*By* **O. GARFIELD JONES**
**Professor of Political Science,**
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THE chief objective, I take it, of municipal reporting is to secure the maximum of publicity for accurate information about the city government at the time when this information is significant and useful. It is also a desideratum that this publicity be secured at the minimum cost.

At Toledo, we make an approach to this ideal in the strategic use of our official weekly, the *City Journal*, as this publication has been edited and utilized during the last twelve years under five different editors and a somewhat changing Commission of Publicity and Efficiency.

### Letting the Newspapers "Scoop" the Official Journal

Briefly, the publicity strategy consists in having on the front page each week an article dealing with the subject on which wide publicity is desired that week. When the *Journal* goes to press on Friday, the City Hall reporters are given copies of this feature article so that they can "scoop" the *Journal* by writing it up in their daily papers on Saturday before the subscribers of the *Journal* get that weekly number.

If this article deals with a live topic and presents it with reasonable "punch," the Saturday papers give it both space and location that insure its being read by the major portion of Toledo's citizenry Saturday afternoon or Saturday night. Frequently this news column write-up on Saturday is followed by editorial comment in the daily press the following week.

Meanwhile the 1,500 subscribers to the *City Journal* receive their copy through the mail Saturday afternoon or Monday and verify the accuracy of the Saturday write-ups in the daily press.

Thus the feature article in the municipal publication with it meager 1,500 subscribers serves as a springboard from which this bit of municipal reporting leaps into the columns of the three daily papers, which have a combined circulation of more than 250,000. And these write-ups in the daily press must come on Saturday because it will be "old stuff" by Monday. Also, these daily press write-ups must be reasonably accurate just because the 1,500 subscribers of the *City Journal*, who are scattered all over the city, do read the original article on Monday.

Obviously, the editor of the *City Journal* cannot control publicity on the negative side. When news "breaks," it "breaks," and the reporters get it regardless of the desires of any of the city officials. On the other hand, there are times when the *City Journal* editor does not desire wide publicity on a certain feature article written primarily for the public schools, for the City Council, or for some other special group.

But when the editor, the agent of the Toledo Commission of Publicity and Efficiency, does desire publicity on a given subject, he can secure his data in advance, hold the material until the critical week arrives and then write it up in such a way as to insure wide publicity in the daily press on Friday or Saturday of that week by releasing it to the reporters as described above.

Once in a while a new *City Journal* editor gets the idea that he is running a publication in competition with the daily press and therefore tries to scoop the newspapers on a bit of municipal news. But he soon realizes that such scoops fail utterly to increase the circulation of the *City Journal*. On the contrary they serve only to suppress publicity on the topic and antagonize the City Hall reporters.

### Saving Money on Legal Notices

The financial strategy of this system consists in using the *City Journal* to publish the legal notices, Council proceedings, etc., that must be published in a paper of general circulation. In Toledo this includes even brief annual reports of the bureaus and departments and the annual budget, either as part of the weekly journal or as supplements to it. In this way Toledo saves a publication and printing bill of not less than $35,000 annually, whereas the *City Journal*, its editor, stenographer and occasional additional help involve a total expenditure for salaries and printing of less than $12,000 per year.

When such a publication is first established, the daily papers will resent the loss of this item of paid city hall publicity and will be inclined to consider the official paper as a competing publication. When the *Toledo City Journal* was established and W. F. Johnson, the first editor to use these feature articles, wrote up a live bit of city news, the daily papers would write it up saying, "Mr. Wendell F. Johnson says 'so and so.'" But gradually they came to quote these articles as *City Journal* articles, until today they no longer consider that paper as competing with them. On the contrary, the Toledo newspapers have come to rely upon the *City Journal* office for municipal information almost as much as the Mayor and City Council do.

### The Toledo Commission of Publicity and Efficiency

This happy situation is largely the result of two factors. The first is that the Todelo Commission of Publicity and Efficiency has from the beginning (1916) in-

### *How Municipal Publicity and Efficiency Could Join Hands*

***An official city publication under an Efficiency and Publicity Commission similar to that of Toledo can provide the best form of timely municipal reporting in such homeopathic doses that the citizens can and will digest it. Furthermore, such a publication can save the city more than twice what it costs. In fact, if such a Commission of Publicity and Efficiency in a metropolitan community were permitted to spend all that it saved the city, it could not only provide the best form of municipal reporting yet devised, but also maintain a usable municipal reference library and operate a worth-while municipal research bureau as well.—O. G. J.***

cluded in its membership outstanding citizens who have been sympathetic with, but not subservient to, the Mayor or Council of the city. The second factor is that the Secretary of the Commission of Publicity and Efficiency, who is also the *City Journal* editor, has been a high-grade student of municipal politics and administration.

Wendell F. Johnson, who invented the idea of the feature article on the front page for the general citizenry (1918-1922), and his immediate successor, C. A. Crosser, had previous newspaper experience. Virgil Sheppard, J. O. Garber and H. T. Shenefield, the present incumbent, had had graduate training in municipal administration and had taught municipal administration before going to the *City Journal* office. In each case these men left the office on their own volition to accept a higher salary elsewhere. Mr. Johnson is now head of the Social Service Federation in Toledo. Mr. Crosser is with the Municipal Research Bureau at Des Moines, Iowa. Mr. Sheppard is Executive Secretary to the Mayor of Toledo. Mr. Garber is with the St. Louis Bureau of Municipal Research. Mr. Shenefield is still editor of the *City Journal*.

The Toledo Commission of Publicity and Efficiency has more nearly fulfilled its original purpose on the publicity side than on the efficiency side. This is due in part to the fact that, since the *City Journal* must come out each week, it has the first claim on the time of the editor; consequently, the Secretary of the Commission of Publicity and Efficiency in Toledo is primarily and preponderantly an editor—a publicity man. It is this publicity feature, of course, that saves the city the $30,000 cited above. However, if the city of Toledo would appropriate for the Commission of Publicity and Efficiency one-half of what is saved for the city by the publication of legal notices, Council proceedings, etc., in the *City Journal*, the Commission could hire an assistant investigator and also pay enough to hold a competent secretary more than two years so that the efficiency end of their work would be on a par with the publicity end.

# Santa Barbara Now Owns Her Entire Waterfront

## *The Miles of White Sand Are Protected Permanently Against "Hot Dog" Stands and Other Unsightly Invasions*

By LYNN C. SIMPSON

THE people of Santa Barbara a few weeks ago authorized by a five to one vote, $200,000 in bonds for the purchase of the last 1,000 feet of the beach front of the city remaining in private ownership. This was the final move in a campaign carried on during many years which has resulted in Santa Barbara's being today one of the very few cities on the west coast in which the beach and water frontage of the city is entirely owned and controlled by the people.

The precedents set and the principles adopted in the management of the waterfront, assure to the people for all time full and free access to the beach. This curving strip of shore stretches for two miles and more across the front of the city proper. Here the citizens and thousands of visitors find rest and recreation without cost.

No "hot dog" stand or any other structure can be placed between the boulevard which extends along the waterfront and the miles of white sand on the sloping beach. The Santa Barbara experience is in contrast with that of many other cities now engaged in buying back at prices running as high as $5,000 a front foot beach lands which they permitted to be alienated from public use.

After the public acquisition by deed of the beach lands on the western side of the city about a half-century ago, the city went to sleep again, and as it slumbered, one administration sold to private interests for $900 the strip of land which the people are now buying back for $200,000.

About twenty or thirty years ago, a strip of several hundred yards was regained. Then there was another lull until about five years ago, when a syndicate headed by the late Frederick Forrest Peabody gained option on a large portion of the beach frontage on the eastern side of the city. Through bond issues these lands were bought and a concrete boulevard was built.

The last act in this long-drawn-out drama of public interest was performed when the problem for the purchase of 100 feet of the waterfront, the key-piece of the whole situation, was presented to the city. This strip lies at the gateway of the city, between two long stretches of publicly owned ocean frontage. Its purchase was absolutely necessary for the protection of the people's interests.

An interesting feature of this last transaction is that while all the remaining ocean-front lands are dedicated to park purposes, this key-strip has been bought under conditions that make it possible to use it as a part of the municipal harbor or for yacht slips which will provide a revenue for harbor purposes.

The people have authorized altogether, four bond issues for the recapture of the harbor lands and the construction of the boulevard along the ocean front. The total of these bond issues is about $950,000.

## UNITED STATES TO HAVE TENTH MUNICIPAL UNIVERSITY

THE tenth municipal university in the United States is being planned by Omaha, Nebr., whose citizens have approved plans for the establishment of a four-year university, to be supported by a mill tax. Ward W. Keesecker, Associate Specialist in School Legislation of the United States Office of Education, writing in *School Life* for October on "Development and Legal Status of the Municipal University," defines a municipal university as "an institution of higher learning mainly supported and controlled by a municipality, requiring graduation from a standard high school for entrance, and maintaining a four-year course in arts and sciences around which one or more schools or departments may be grouped." The following are the nine municipal universities or colleges known to exist at the present time in the United States, listed in order of their establishment on the municipal basis: College of Charleston (South Carolina), 1837; University of Louisville (Kentucky), 1837; College of the City of New York, 1847; Hunter College of the City of New York, 1870; University of the City of Cincinnati (Ohio), 1871; University of Toledo (Ohio), 1884; University of Akron (Ohio), 1913; University of the City of Detroit (Michigan), 1923; Municipal University of Wichita (Kansas), 1926.

# The Municipality's Part in Conserving Its Greatest Asset

*That City Fathers May Meet the Challenge of the City's Children*

*By* S. J. CRUMBINE, M.D.
**Planning Committee, White House Conference on Child Health and Protection**

THE adult who has the opportunity to watch the development of a human being through the play of infancy, the activity of childhood, and the adventure of youth, until in manhood he becomes a responsible citizen sharing in the work of the community, realizes that children are the greatest asset of the city. In this moving civilization of ours, however, many adults spend their days without seeing evidence of this living force in their city and without giving thought to it. The responsibility of city officials for conserving children is therefore the greater. Men who centuries ago were called the "fathers" of the city must today have even more a father's interest in the growing members of the community.

Through such departments as those of Health, Education, Playgrounds, Parks, Libraries and Welfare, city officials come in direct contact with children, while the work of others has for the most part an indirect influence on young lives. In their effort to keep posted on the most successful ways of dealing with children in these changing times, men and women in city departments may find assistance in the various reports submitted to the White House Conference.

### The Three Greatest Health Problems

The Public Health Section of the Conference asked the municipal health officers in 186 cities throughout the United States to describe the three most important problems in their respective cities. The answers put child health—emphasizing that of infants and preschool children—as chief among their problems. Tuberculosis came second, and maternal hygiene was third.

The difficulty of securing trained personnel for any phase of public health work, and especially for the first and third problems mentioned, is great, since public health courses are rather recent developments in the curricula of medical schools and therefore we have not yet the widespread training in public health which will be common a few years from now. Short courses in public health for physicians, nurses and sanitary inspectors, given in connection with hygiene and preventive medicine, have been instituted in a number of places and will help greatly to give the additional training which is needed.

Among the fundamentals of child health work the Conference emphasizes the following: medical supervision of prenatal cases, together with conferences and field nursing service; supervision of the infant and preschool child through child health conferences and treatment clinics, plus vaccination against smallpox and immunization against diphtheria before the child is one year old; responsibility for the health of the school child, involving control of contagion and physical examination of school children and follow-up for the correction of defects; and cooperation with the school health education program. The control of communicable diseases and the safety of the milk supply were considered so vital to the health of the child that these two subjects were handled by separate committees.

The Conference recommends: "that all child health activities, whether under federal, state or local government, as well as activities sponsored by private agencies, should be coordinated and under official supervision; that child health activities should be standardized so as to be scientifically sound; that preventive health measures for children of the early age groups be extended; and that federal, state and local, as well as private appropriations, be increased to perfect and extend child hygiene activities." The suggestion is also made that many cities would find it advantageous to select advisory committees of practicing physicians and dentists in order to tie up more closely the public health program with the routine practice of local members of these professions.

### Preventing Preventable Diseases

In connection with the control of communicable diseases the Conference states that, in spite of existing protective measures, there are nearly 3,000,000 cases reported in this country annually. About half of these occur among children, frequently resulting in permanent disabilities which handicap the child through life. From 50 per cent to 75 per cent of the nation's crippled children owe their condition to infantile paralysis and tuberculosis. Blindness, deafness, damaged hearts and kidneys, increased susceptibility to other infections, are all found in the wake of communicable diseases among

### The President's Message

**"The greatest asset of a race is its children," said President Hoover in calling the recent White House Conference on Child Health and Protection. "Their strength and development should prepare them to receive the heritage which each generation must bequeath to the next. These questions have the widest social importance, which reaches to the roots of democracy itself. By safeguarding the health and protection of childhood we further contribute to that equality of opportunity which is the unique basis of American civilization."**

children throughout the United States.

Early recognitions, reporting, isolation and quarantine of cases is necessary, but because the knowledge of control exceeds its practical application, the health officer must depend for effective results on an informed cooperative public. Thoughtful, long-continued education of the citizens of the community must be undertaken by those "city fathers" who would guard children from the suffering caused by diseases which are for the most part preventable.

Preventable, too, are the milk-borne epidemics to which half the children in the nation are exposed. The 258 epidemics of the past six years showed no decrease in diseases spread in this manner, notably typhoid fever, scarlet fever, septic sore throat and diphtheria. These outbreaks occurred not merly in rural districts, but in the small cities of less than 25,000 population, cities which do not require 100 per cent pasteurization of their milk supply. The health officers of these cities have a definite responsibility for making milk safe by means of pasteurization.

Protecting the physical health of children, however, is but one aspect of the problem of guarding those who form the greatest asset of the community. As President Hoover said, "From health in the physical sense, we have arrived at the ideal of health as wholeness, signifying the development of the child in his complete endowment—physical, mental, emotional, and spiritual." Providing for children safe food, milk and water, sanitary homes, and access to fresh air and sunlight, as well as arranging for frequent health examination and treatment even in the early years, is a task sufficient to challenge city officials, but the achievement of all this is not enough. The city fathers must plan for and encourage the mental, emotional and spiritual development of children.

### What the Schools Can Do

Schoolhouses, for instance, should be located, built, equipped and operated according to scientific health principles. Officials may well ask themselves how many children are spending several hours a day in buildings which do not meet known health standards because of the lack of a well-rounded attempt to secure the necessary funds or because available funds were not used with the greatest possible efficiency and economy.

What the schools can do to promote the health of children is outlined by the Conference. There should be a dental inspection for every child twice a year and a health examination once a year, giving consideration to the child's mental, emotional and social health as well as to his physical health. City officials, like teachers and parents, should learn what this means, for too few adults know enough about the science of human relationships to realize why shyness, for instance, may be more detrimental to a child's future than lying or stealing.

School or district nurses, or visiting teachers should follow-up these examinations to advise and assist parents in making arrangements for having the defects corrected. There should be a daily inspection of each pupil to discover those children who show any signs of health disturbance, such as coughing, sneezing, headache, earache, skin eruption, or running eyes, ears or nose. There should be more kindergartens and nursery schools for young children, that they may begin early to learn how to live happily in a world with others of their own age. School programs and home study requirements should be planned in accordance with the health needs of the children. Health teaching should promote such habits of diet, sleep, work and play as will contribute most to the full mental and physical vigor of each child, and this program should include instruction in safety. There should be rigid standards of health for the entire school staff. Finally, teachers should be trained to understand the personality needs and growth of the child, for the early recognition of behavior problems, with the aid of a psychiatrist, will prevent much future unhappiness and in some cases the development of delinquency.

### A Reversal of Emphasis Needed

This knowledge of human behavior in dealing with children is emphasized repeatedly in the reports of the Conference. Only as the child's whole personality expands, can his character develop. The teacher, therefore, rather than teaching arithmetic should teach Harry Smith by means of arithmetic. The doctor, rather than prescribing for typhoid fever, should prescribe for Harry Smith suffering from typhoid fever. The playground supervisor, rather than training a first baseman, should train Harry Smith on first base. This reversal of emphasis is necessary if children are to achieve that maturity of character which makes for responsible citizenship.

Certain children in every city require unusually thoughtful care. Too few parents and officials realize that the child who is hard of hearing, nearsighted, crippled, hampered by a weak heart or otherwise handicapped, may, like the normal child, become a self-supporting citizen, provided the community realizes that he is a potential asset more than a liability. The city fathers should then work out means for the early discovery, diagnosis, treatment and after-care of such weaknesses, and through the school system provide these children with whatever special education they may need. Each has some particular ability which should be capitalized through careful vocational guidance and training. In fact, all the children in the community should be included in a vocational program which will lead each into his most appropriate work, with preparation not merely for making a living but for growing and living.

### Special Guidance for Exceptional Children

Our educational program involves one group of children to whom little attention has been paid, one which should perhaps receive the most consideration—the specially gifted children. The United States has a million and a half of these exceptional children, according to the Conference. "There," said President Hoover, "lies the future leadership of the nation if we devote themselves to their guidance." Yet only 4,000 of these children are receiving the special education which would enable them to take a place of responsible leadership in the modern world. Many of the gifted children of yesterday are today in penitentiaries or are working for their own selfish interests contrary to the common good. And there are just forty American cities which are giving their exceptional children special guidance in their school work.

Children with an intelligence quotient of 120 or above should be segregated in classes which cover one subject in addition to the regular curriculum for the year and which permit each child to spend the rest of his time in some way agreed upon by him and his teacher. There results a variety of activities carried on by individuals and by small

groups. This "enrichment" of the regular school program has proved more satisfactory than the older rapid progress method of giving double promotion. Under that system the child could often do well in his studies, but he would probably not have classmates of his own age and would seldom develop any sense of team play.

### Leisure-Time Activities

Since, as the Conference found, 40 per cent of the time up to eighteen years of age is spent outside the home and school, the leisure-time activities of children are very much the concern of the city fathers. Playgrounds, accessible and adequately supervised, with provision for the young child of preschool age, are essential, because play is the work of the child. It helps him to build a strong body and develop desirable character traits. Play out of doors is especially important, for, as Dr. Miriam Van Waters of the Juvenile Court of Los Angeles pointed out, young people get "great enjoyment out of flowers, trees, water, earth and rocks." In one American city the Playgrounds Department pays the carfare of children to the lakefront in summer, and another maintains summer camps in the mountains.

The increasing scarcity of trees in the modern American city calls for cooperation between the Park Department and the Playgrounds and Education Departments. When, as now happens, a tree is such a rare specimen that a street becomes known as "the street with a tree on it," the city fathers should take action, not merely for preserving and planting trees, but for using other green living things, like wisteria, which is now being developed for such purposes by the National Arboretum.

Because commercial amusements have such an important effect, often detrimental, on the welfare of the children, city officials, the Conference emphasizes, must supervise such activities more carefully. Particular attention needs to be given to amusement parks, dance halls, excursion steamers and pool-rooms. Too often these have a fringe of criminal hangers-on, and serve as recruiting places for the youngster who is attracted by the adventure associated with crime.

### To Aid and Educate—Not to Punish

The alarming number of juvenile delinquents in this country brought from the Conference the statement that while physical defects have a bearing on misconduct, "the much larger portion of the difficulties are the natural consequence of the child's attempt to fulfill his own needs in his adjustment to the social groups in which he must live. The child's emotional life, his family traditions, his family's economic and social needs, the satisfactions or lack of satisfaction to be found in life at school, the influence or failure of influence of the church, the effect of early fatigue, of industry and the child's maladjustment to it, all play important parts in his development toward or away from delinquent tendencies. Our law has so busied itself with property that the fundamental principles of human life and conduct have not had careful analysis. The 'problem child' must become 'the problems of the child.'" This attitude, which has accomplished the best results in handling delinquent children, throws great responsibility on the adult members of the community. The example of the adult lives about him is unconsciously woven into the life of a child, and so the first duty of every official, as well as of every parent, is to aid and educate, not to punish, the child. Any city which has learned this sufficiently to put it into practice will have taken a long step in preventing delinquency.

### An Important Key to Success

The word "learn" is perhaps the key to success in any city's effort to conserve its greatest asset. Education must continue through manhood and womanhood, if parents and all those in authority are to be equipped to guide children in these changing times. The American gives his child many material advantages, but he fails to teach him a sense of values, especially in human relationships. That men and women may know more about human behavior and what influences it for good or ill in the growing members of the community who will become its future citizens, there is need of adult education, by means of classes, lectures and more extensive use of public libraries. If, especially during a business depression, a city provides such opportunities for adults to get more satisfaction out of their leisure time, the leisure-time activities of many children will show less evidence of strain or desire for destruction. The history of a boy who was brought before the juvenile court, for example, showed that his bad behavior had been noticeable only since a period when his father had been out of work. "I didn't know my dad could be so mean until he stayed at home all day," the boy explained.

### Increased Adult Interest

There is encouragement, however, in the interest shown by many parents and other adults in seeking better ways of dealing with children. The White House Conference itself is evidence of this, for its 1,200 men and women, including busy officials, gave freely of their time and effort to secure the best available knowledge on child health and protection. Only a few of their committee reports are mentioned here. The total findings and recommendations provide source material which will be used for some years for the development of constructive programs concerning child health and protection.

## Great Lack of Rural Health Service Facilities Officially Indicated

ONLY 25 per cent of the rural population of the United States is at present provided with adequate and properly organized local health service, reports Surgeon General H. S. Cumming in his annual résumé of the work of the United States Public Health Service during the past fiscal year, which has just been submitted to Congress and which ably reinforces the arguments of local health authorities and others for more even disposition of service in this field.

"It is the opinion of the Public Health Service and of the state health authorities, as well as of outstanding leaders in the field of public health in a number of educational institutions and elsewhere," writes Dr. Cumming, "that the development of efficient whole-time local health organizations through which all necessary public health activities may be conducted in proper sequence and in proper relation one to another, is the program which will yield a far greater return on the dollar invested, in lives saved and sickness prevented among all groups of both sexes than any program limited to special diseases or to particular elements of the population that has ever been tried out or suggested."

# The Municipal Regulation of Gasoline and Oil Storage*—II

*By* **ROBERT S. MOULTON**
**Technical Secretary**
**National Fire Protection Association**

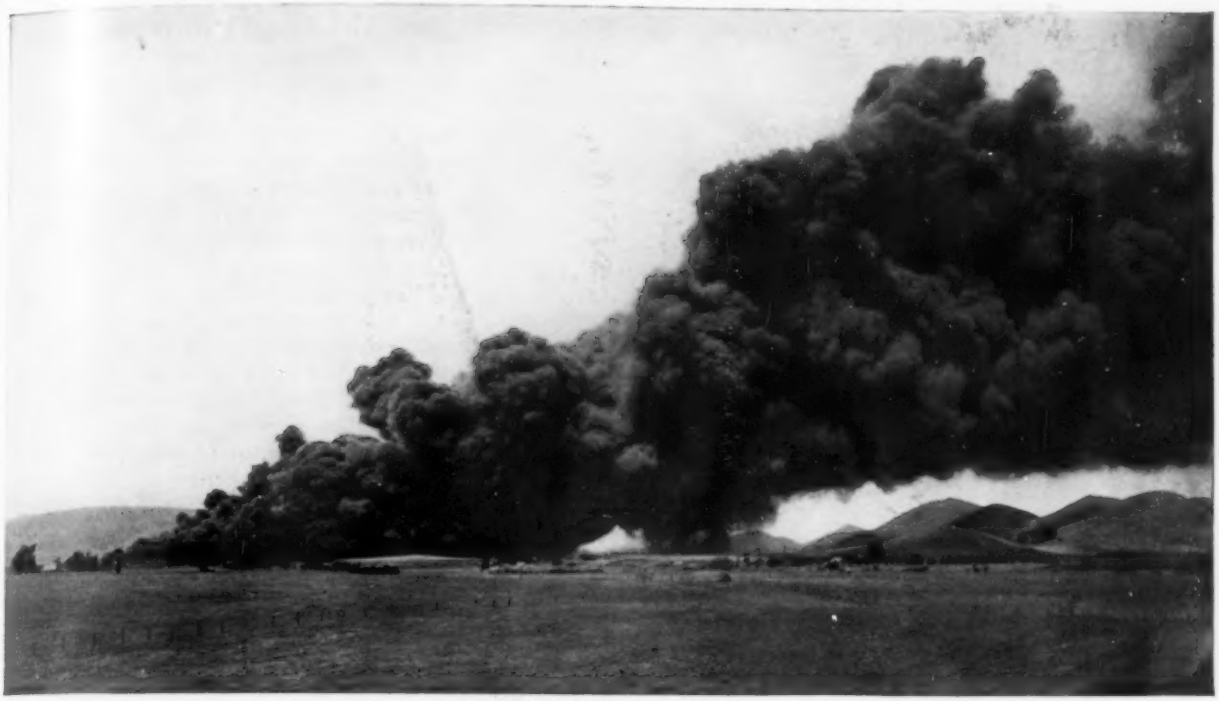
THERE is popular fallacy that liquid gasoline is explosive. As a matter of fact, as long as the gasoline stays in the liquid form there is no danger of an explosion. It is only when it is vaporized and the vapor mixed with air in certain proportions that it becomes explosive. Lack of knowledge of this simple fact, which is illustrated by the everyday operation of the ordinary automobile engine, has been responsible for a good deal of unnecessary fear about the storage of gasoline in closed containers, and at the same time for taking foolhardy chance with gasoline vapor. The ordinary gasoline tank contains so much vapor above the liquid level, with little or no air present, that the mixture is too "rich" to explode. The supposedly empty tank, however, may contain a highly explosive mixture of gasoline and air vapor. A tank from which the liquid has been removed and air admitted may still contain a small quantity of liquid which will give off sufficient vapor to form an explosive mixture ready to be ignited by any chance spark. A number of disastrous explosions have occurred in oil tanks in ships which have been supposedly emptied preparatory to repair operations, but where sufficient liquid remained to form an explosive mixture. Modern practice is to use great care in cleaning a gasoline or oil tank. It is thoroughly washed out, steamed to remove any remaining vapors, and before men are sent inside the tank to do any work the atmosphere is tested to make sure that it is safe for them to enter.

When gasoline tanks are exposed to severe external heat, pressure is generated just as in a steam boiler, and unless a suitable vent is provided, they may explode just as steam boilers sometimes explode. This type of explosion is not a "gasoline explosion" in the ordinary sense

* Editorial Note.—Through the courtesy of the National Fire Protection Association, The American City has the privilege of publishing in two instalments, of which this is the second, the accompanying article, which appears in the January, 1931, issue of the Association's *Quarterly*. Mr. Moulton's discussion of this important subject of the municipal regulation of gasoline and oil storage is believed to be the most comprehensive and practical which has yet appeared. Unfortunately, two illustrations used in the first instalment were erroneously captioned, as follows: The illustration on page 147 should have been captioned: "Gasoline burning on surface of water," and should have carried the descriptive statements appearing under the cut on page 150. The cut on page 150 should have been captioned, "Oil fire with great volume of smoke. Where there is smoke there is fire, but in the case of an oil fire an enormous volume of smoke may be generated in a fire that does relatively little damage. The total cost of this fire, including chemicals used in its extinguishment, was about $500."

**SMALL-TOWN OIL FIRE**

A loss of life and the destruction of a substantial part of the business property of this town resulted from the apparent disregard of recognized fire-safety precautions. The oil tanks were located too close together, too near the railroad right-of-way and adjoining property, without dikes and with no available foam or other special protection for oil fires



A TANK FARM CONFLAGRATION

Wood is not a suitable material for the construction of any part of an oil tank. Wooden-roofed tanks have been responsible for most of the major oil conflagrations in the past. Modern practice is to use all-steel construction

of the term, but a pressure rupture of the container from internal pressure, which may occur with water or any other liquid in a closed container subjected to heat. It is to avoid this danger that vents are required on all oil tanks.

Gasoline vapor is heavier than air and where there is no special ventilation it will flow along the floor, through doorways and along the ground, sometimes to be ignited at a long distance from its point of origin. This fact should always be remembered in connection with the use of gasoline in any quantity. It is an insidious hazard, for vapor may collect in the bottom of pits or near the floor in buildings, not reaching high enough to be detected by the sense of smell of a man walking into the building, but nevertheless present in sufficient quantity for a serious fire or explosion if ignited by a chance spark, such as that which might be struck by the iron nail of a shoe against a concrete floor.

Kerosene does not give off explosive vapors in dangerous quantities at ordinary temperatures. This is the reason that there is so much less hazard involved in the use of kerosene than gasoline. Kerosene, however, when it is heated to something above 100° F., or, in other words, above its "flash point," does give off explosion vapors and has fire hazard characteristics similar to gasoline.

### Familiarity Breeds Contempt

As is the case with other fire hazards, men handling gasoline and other flammable liquids every day tend to become careless and to neglect necessary fire prevention precautions. This is probably the principal reason for the fires that occur in connection with gasoline and oil storage, but it is a cause of fire that is readily preventable, as has been demonstrated by the experience of the larger oil companies, which insist upon strict observance of fire precautions by their employees and make smoking a cause for instant dismissal.

Men are sometimes encountered who say that gasoline cannot be ignited by a cigarette, and who will even offer to demonstrate this by experiment as justification for their smoking while handling gasoline. It is true that under average conditions gasoline may not be ignited by a burning cigarette; ignition takes place only when brightly glowing tobacco comes in contact with gasoline vapor and air mixture of favorable proportions. A thousand cigarettes may be smoked by a man handling a gasoline hose at a filling station without meeting conditions favorable to fire, but the thousand and first may cost him his life. "No Smoking" rules cannot be too strictly enforced where gasoline or other flammable liquids are handled.

### Ignition by Static Electricity

The sparks that are made by rubbing a cat's back, or that jump between your finger and a metal doorknob after you walk over a rug or carpet on a dry winter day, are called "static" sparks. Such sparks of static electricity are frequently sufficient to ignite the vapors of gasoline or other flammable liquids, and explain the gasoline fires and explosions that sometimes occur with no apparent source of ignition present. Static electricity may be generated by the rubbing or friction of any substance which is not a conductor of electricity, or by the flow of fluids. Pouring gasoline from a pail into a tank sometimes causes a static spark that ignites the gasoline vapor. The way to prevent sparks of this kind is to maintain metallic contact between the pail and the tank, so that electrical charges will have no opportunity to accumulate. For this reason the metal nozzle of the gasoline hose used to fill the automobile tank should always be inserted in the fill opening to make metallic contact with the tank. Electrical

SPECTACULAR FIRE NOT INVOLVING OIL

Gasoline and oil storage is only one of many types of hazardous occupancies that may menace surrounding property in case of fire. Wood was the fuel for this fire

"grounding" of all objects likely to accumulate static charges is standard practice for the prevention of static sparks, and should be insisted upon wherever flammable vapors are present. If the relative humidity of the atmosphere is high, static electrical charges do not accumulate, and for this reason artificial humidification is an important fire prevention measure in dry-cleaning establishments and in manufacturing plants where there is a flammable vapor hazard.

### Other Sources of Ignition

Other sources of ignition—smoking, open lights and fires, etc.—are so obviously hazardous in the presence of flammable liquids that ordinary common sense furnishes the only fire prevention guide necessary. The hazard of electric lighting and power equipment is not always so obvious. Ordinary electrical equipment may cause small sparks in operation, which are harmless in the usual building but a serious hazard in the presence of gasoline or other flammable liquids. A special type of wiring and equipment should be used, especially designed for safe operation in the presence of flammable vapors. This is commonly required by electrical ordinances, and the National Electrical Code has a special section dealing with locations where flammable vapors may be present.

### Home Dry-Cleaning

The fire and explosion hazard of gasoline is most pronounced under conditions where the liquid can readily evaporate and the vapor mix with air. The home use of gasoline for dry-cleaning purposes represents an extreme hazard. Here clothing is saturated with the liquid, which evaporates as the clothing dries. The slightest spark—a pilot light of a gas stove or even the friction of rubbing garments—is sufficient to ignite the vapor. Hundreds of women and children have lost their lives because of the use of gasoline in this way. The sale of gasoline for home dry-cleaning purposes or any similar home use should be prohibited, particularly so in view of the fact that nonflammable dry-cleaning liquids are readily available.

The professional dry-cleaner understands the hazards of the use of gasoline and has his property safeguarded. Gasoline is seldom exposed in the open air, most of the operations being carried on in closed machines. Furthermore, dry-cleaners are now largely using special cleaning liquids similar in cleaning properties to gasoline, but without the same fire and explosion hazard.

### The Industrial Use of Flammable Liquids

Many types of manufacturing plants use flammable liquids to a greater or less degree in connection with their operations. They may use gasoline or other petroleum oils, alcohol, or various special solvents which are classed as flammable liquids. The extent of the hazard of this use depends on the character of the liquid and the way it is employed. Any process which permits dissipating flammable or explosive vapors through buildings is obviously hazardous. This is a special problem which requires expert fire protection engineering attention and which cannot be discussed within the limits of this article. In extreme cases the hazard may be such that the factory should be placed in a remote location, but ordinarily it is possible through the application of recognized fire prevention measures to so protect the use of flammable liquids in manu-

HOME DRY-CLEANING FIRE

Gasoline was responsible for an explosion and fire that cost the life of the woman who was cleaning curtains in this kitchen. A quart of gasoline brought into the home for dry-cleaning may be more dangerous than a large tank outdoors. The sale of gasoline for home dry-cleaning purposes should be prohibited

facturing operations that public safety is amply guarded.

### Oil Refineries

Oil refining is in general a hazardous process which should be located either outside of cities or in designated industrial districts reserved for hazardous industries. In the oil refinery petroleum is handled under high pressure and elevated temperatures, and fire heat is provided as an essential part of the process. Gasoline or oil under high pressure is separated from the furnace only by the shell of a drum or the wall of a pipe, any failure of the steel permitting the discharge of oil into the furnace. Skilled operation by competent personnel of course does a great deal to mitigate the hazard. Oil refineries destroyed by fire cannot operate, and it is to the interest of the operating personnel to prevent fire. Nevertheless, the oil refinery must be considered in the class of a hazardous occupancy which, from the viewpoint of public safety, should be located either outside of the city or in a district specifically zoned for hazardous industries.

### Gasoline Filling Stations

The location of gasoline filling stations in residential or semi-residential districts is frequently opposed by adjoining property owners. Filling stations of the usual type with tanks underground, with pumps of approved type, and with concrete and other fire-resistive material predominating in the construction, present a relatively small fire hazard. There is of course the danger of carelessness in filling the underground tank from a gasoline tank truck, and the transfer of gasoline from the pump to the automobile tank involves the possibility of fire, but in the opinion of the writer the community fire hazard is not appreciably increased by the presence of a modern gasoline filling station under competent management. There are gasoline filling stations that should be considered a distinct fire menace where improper construction and location of equipment, accumulations of combustible rubbish, and generally careless personnel, make for conditions veritably inviting fire. Such conditions are, however, the exception and should be taken care of by the proper enforcement of municipal fire-safety regulations.

SEWER EXPLOSION

Gasoline and other flammable liquids should be kept out of sewers. Oil traps should be located in the drains from garages, dry-cleaning plants, and other establishments using flammable liquids

### Crank-Case Drainings

The used oil drained from automobile crank cases contains more or less gasoline, the amount depending upon weather conditions and the method of operation of the individual automobile engine. Crank-case drainings should always be handled with this in mind, and should not be used for oil-burner fuel, because the gasoline content renders such use distinctly hazardous.

The disposal of used crank-case oil presents a troublesome problem. The proper method is to have it collected from the gasoline filling stations by some central agency that can handle it safely and put it to some useful purpose rather than leaving it in the hands of the individual filling station, where it may be used in a home-made oil burner or surreptitiously poured into sewers. At least one city has a free municipal collection of crank-case drainings, operated like the municipal garbage collection. In other cities it is collected by the larger oil companies, and sold for various special uses. Equipment is now available for purifying this oil so that it may be used again as a lubricant.

The disposal of waste gasoline and other flammable liquids is frequently a problem in garages, dry-cleaning establishments and the like. Emptying into sewers is an easy method of disposal, but highly hazardous, as has been demonstrated by the experience of various cities that have had serious sewer explosions. Wherever garages or other establishments have drains leading into sewers, oil traps should be required to separate gasoline and oil from the water and prevent the escape into the sewer.

### Gasoline Tank Trucks

The distribution of gasoline to filling stations and for the general uses of the community includes its transportation by tank trucks through city streets. This involves an element of hazard in case of collision or other accident to the tank truck. Where gasoline escapes into the street and is ignited in some way, serious consequences may result. Proper construction of tank trucks (see N.F.P.A. pamphlet on this subject) does a good deal to reduce this hazard but cannot eliminate it altogether. It is not practicable to prohibit the operation of tank trucks in the city streets. The supply of gasoline which they furnish is a public necessity, and tank trucks are probably the safest practicable means of transportation.

### Tank Cars

The tank car containing gasoline or other flammable oil presents a hazard on the railroad right-of-way which is comparable to that of the tank truck in the street. The design and construction of tank cars is subject to careful supervision on the part of the Committee on Tank Cars of the American Railway Association. A railroad wreck involving tank cars has dangerous possibilities, however, no matter how well constructed the tank cars. The trans-

fer from tank cars to distributing tanks in cities is a point of some hazard. This operation should be kept out of the high-value districts of cities so far as possible, although it is not reasonable to prohibit it altogether. A tank car contains a larger quantity of gasoline than the tank truck, but the hazard is similar.

### Pipe Lines

Gasoline and other oils are now transmitted long distances through pipe lines which extend from the oil fields to large cities that are centers of distribution and consumption. Where the pipe line passes through the open country, it is not a cause of concern, but where it comes into the city, particularly where it passes through city streets, there is an element of hazard. Thus far there have been few, if any, fires or accidents incident to the location of pipe lines in city streets. This may be due to a relatively small hazard, or due simply to the fact that there has not as yet been sufficient experience with the location of pipe lines in cities to permit drawing conclusions. A pipe line in the city street may be subject to mechanical injury owing to street excavations for other pipes, or it may fail owing to the effects of vibration due to the street traffic. Substantial construction of the pipe line buried well beneath the street, protected by a substantial pavement, or the pipes otherwise protected from mechanical injury, should largely control this hazard. In case gasoline does escape from a pipe under pressure running through the city streets, a continued leak may saturate the ground for a considerable distance, seep into the basements of adjoining buildings, and cause a great deal of trouble. We have a somewhat comparable experience in the piping of illuminating gas through the city streets. Gas pipes are similarly subject to breakage, and gas is similarly flammable. The difference is that gas tends to rise and escape into the air, while gasoline will remain in the ground.

### Gasoline and Oil Stoves

The old-fashioned kerosene oil stove has been the cause of a great many fires. Despite the frequent reports of oil-stove "explosions," scientific investigation shows that true explosions seldom, if ever, occur. Fires from oil stoves largely occur from placing stoves too near combustible material, from carelessly overturning them, and from flare-ups due to the use of dirty or defective stoves. When a stove is overturned and burning kerosene flows out on the floor, the fire flashes so rapidly that it is frequently described as an explosion. This is an important hazard wherever the use of oil stoves is general, but one apparently not susceptible to municipal control except through public education and through the activities of fire department inspectors.

Gasoline stoves for cooking are convenient for use where other types of stoves are not available, but are more hazardous than gas, electric, or coal-burning stoves. The hazard of the stove itself can be minimized by the use of stoves listed by Underwriters' Laboratories and installed in accordance with the Regulations of the National Fire Protection Association, but the hazard of storing and handling the gasoline supply cannot as a practical matter be eliminated.

### Oil-Burning Equipments

Oil burners in their initial development were a cause of considerable concern to fire prevention authorities, but properly constructed burners, bearing the label of Underwriters' Laboratories as evidence of their proper design and construction, installed in accordance with the recommendations of the National Fire Protection Association, have enjoyed a relatively favorable fire record. An oil-burner ordinance, enforced by the fire department or other local authority, is, however, in general necessary to guard against the hazard of home-made and other unapproved oil burners and unsafe installation.

### Fire Extinguishment

Gasoline and oil fires cannot ordinarily be put out with water, but there are available extinguishing methods for readily handling such fires. There are special types of extinguishers for oil fires, including among others carbon dioxide, which in effect blows out the fire by the use of a non-combustible gas; carbon tetrachloride—a special extinguishing liquid used for small gasoline and oil fires; and foam—a frothy substance somewhat resembling a brown soap suds, which will float on the surface of the oil, excluding the air and thus smothering the fire. This foam is produced by the use of special chemicals with water and it may be supplied either from a portable fire extinguisher or by a large-size fire department hose stream. It is a common practice in the larger cities of the United States for the fire department to have as a part of its equipment a foam generator, together with a supply of foam chemicals, for use in combating gasoline and oil fires. The larger oil storage properties frequently provide their own foam protection with fixed installations to handle any fire which may occur in their tanks. Sometimes private foam protection is required by the city authorities, depending upon the local conditions. It is often felt that an oil tank may with safety be located nearer to adjoining property where adequate foam protection is provided than where no such protection is available.

While water will not ordinarily extinguish gasoline fires, there are many situations where the application of water through automatic sprinklers is considered excellent protection for gasoline and other flammable liquid hazards. In garages and airplane hangars, for example, it has been shown by test and by actual fire experience that automatic sprinklers are very effective. The burning gasoline may not be immediately extinguished, but the water spray keeps the interior of the building cool and makes the flame harmless. It prevents the development of sufficient heat to rupture gasoline tanks and thus release additional fuel to feed the fire. Likewise in various industrial occupancies where the flammable liquids hazard is pronounced, automatic sprinkler protection has been found effective.

### The N. F. P. A. Regulations

The National Fire Protection Association, in accordance with its general policy of furnishing public guidance in the control of all fire hazards, has given careful study to various phases of the hazards of flammable liquids, and has published recommendations that may be made the basis for municipal ordinances or regulations, and are available for guidance of all those interested in eliminating the fire hazards in their own properties. These recommendations are drawn by technical committees including representation from fire insurance companies, the oil industry and other industries affected by the rules, fire chiefs and governmental authorities. They are generally

accepted as the recognized guide to good practice in the control of fire hazards. The recommendations are not designed to give 100 per cent fire safety, for this would be impossible without drastic and burdensome restrictions. They are designed, rather, to provide reasonable public safety, without imposing any undue burden upon industry or the general public. Among the publications in this class, of particular interest in connection with the flammable liquids hazard, are the following:

Suggested Ordinance Regulating the Use, Handling, and Sale of Flammable Liquids and the products thereof, including requirements for automobile gasoline service or filling stations, and appendix on rooms, cabinets, and outside houses for storage of flammable liquids.

Marine Oil Terminals, Recommended Good Practice.

Automobile Gasoline Tank Trucks, Recommended Good Practice.

Oil-Burning Equipments, Regulations for installation and operation, with separate treatment of industrial and domestic equipment.

# Municipal Diesel-Electric Plant in Coal Region Expands Out of Earnings

*By* **O. L. HEBBLER**
**Superintendent,**
**Board of Public Works,**
**Higginsville, Mo.**

HIGGINSVILLE, a city of 3,339 people in the west-central part of Missouri, in coal-mining territory, has had a long experience with municipal electric light and power, starting with a steam plant and changing eventually to diesel power, with noteworthy results.

The first plant, dating from 1893, used coal-fired boilers, as was natural for the time and the locality. The prime mover was a 75-horsepower high-speed steam engine. It was superseded in 1904 by a Corliss engine of 125 horsepower, to which was later added a poppet-valve engine, bringing the total capacity to 350 hp. This addition, however, proved to be an inefficient generating unit under the conditions and with the increase in costs of operation caused by war prices it became difficult for the plant to meet its operating expenses. This occasioned a deficit, to overcome which, and to improve the physical condition of the plant, a bond issue of $12,000 was voted in 1920, rates were raised, the poppet-valve engine was replaced by a non-releasing Corliss engine, of considerably greater fuel economy, the plant was generally overhauled and its physical and financial status improved to a marked degree.

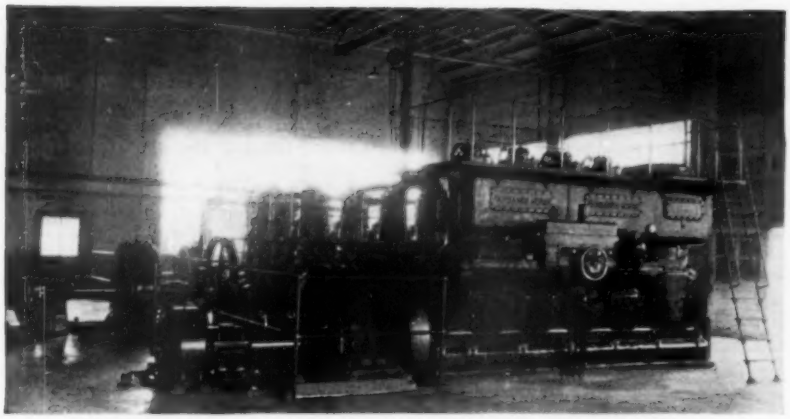
### Power Company Obtains Foothold

The city supplied all electric central-station service in Higginsville throughout this period until 1922, when the public utility company operating in that part of the state obtained permission to build power lines through the city, on the understanding that it would not compete with the municipal plant. Thereupon the company came in with its lines and built a substation to serve the surrounding territory. Despite the agreement not to solicit business in that city, one of the largest factories was obtained as a customer, an action that was acquiesced in by the city at the time, chiefly because the municipal plant was already loaded almost to capacity and it was not thought feasible to install additional equipment to handle the business in question, at the rates offered to it by the company.

Upon obtaining this foothold the power company in 1923 offered the city a wholesale rate of 3½ cents per kilowatt-hour for power at the switchboard; and as the city's direct cost, without interest or depreciation, was then 3.4 cents at the switchboard, the proposal was given consideration and submitted to the voters, who, however, rejected it. Later in the same year the proposition was again submitted, inasmuch as the demand on the municipal plant had increased, but it was again defeated, although by a narrow margin.

In April, 1924, a new administration came into power which was actively in favor of developing the possibilities of the municipal utilities. The water works was by this time urgently in need of expansion to meet the needs of the growing city, so a $100,000 bond issue to construct a

DIESEL ENGINE POWER PLANT AND WATER-WORKS PLANT, HIGGINSVILLE, MO.
The plant has a total installed capacity of 2,060 hp. in diesel engines



VIEW FROM THE ALTERNATOR END OF THE 560-FAIRBANKS-MORSE DIESEL ENGINE GENERATING SET AT HIGGINSVILLE, MO.
The two earlier units are shown in the background

complete new system was voted by a large majority. With this necessary improvement taken care of, however, it was impossible to float bonds for additional power-plant equipment, as the city's borrowing capacity was nearly exhausted.

### Expansion Made Possible with Diesel Engines

Although the enlargement or rehabilitation of the electric plant through a bond issue was out of the question, a ray of hope appeared in the situation as the Board of Public Works became interested in the diesel engine as a means of producing power. Early in 1925 a thorough investigation of diesel-engine plants of various types was made, which resulted in a favorable reaction to a proposal for the installation of two Fairbanks-Morse diesel units, with a new switchboard and complete auxiliary equipment, in a new brick power-plant building designed to accommodate two additional units, all to be paid for out of the plant's earnings, while at the same time a 20 per cent reduction in rates was to be put into effect, for the benefit of the consumers. This represented such a reversal of the financial outlook of the plant that the Board was inclined to be skeptical, but with belief in the financial integrity behind the proposition, and that the city had everything to gain and little chance of loss, it was approved and a contract entered into by the City Council. The two units were of 240 and 360 hp., respectively, representing an increase of 250 hp. in the plant. The old steam units were junked.

The new generating equipment was installed under the Fairbanks-Morse plan of payments to be made out of the net earnings of the plant. These payments were easily met despite the reduction in rates, and a surplus began to build up. The power-plant building was financed on credit and money borrowed for labor.

Demands for additional service increased rapidly, and the margin in capacity that existed when the new equipment began operating was soon inadequate. In June, 1928, the Board of Public Works took up the question of another generating unit, and entered into an arrangement whereby a 560-hp. Fairbanks-Morse diesel engine was installed, in September, the cost of the new unit being combined with the unpaid balance on the old equipment, and all to be paid in monthly installments as before.

In July, 1929, by which time the city's modernized plant had shown itself to be physically and financially successful, the power company made a proposal to the City Council to purchase the electric property for $150,000. The offer being rejected, the company followed in August with a bid of $235,000 for the electric and water plant, together, an amount $90,000 less than the appraised value. This was likewise rejected. Public opposition to the offer was pronounced.

With the advent of 1930 the plant was prospering sufficiently so that another rate reduction, amounting to nearly 20 per cent, was made. The resultant rate schedule includes the following: domestic and commercial lighting, 10c to 4c per kilowatt-hour; cooking and refrigeration, 4c to 2c per kwh.; commercial and industrial power, 5c to 1½c per kwh., if consumption exceeds 15,000 kwh. per month. These rates compare favorably with those in other municipalities of similar size, but are not at the lowest possible level for Higginsville, the policy being rather to allow a surplus to accumulate, which can be used for various civic projects.

### A Surplus for Civic Purposes

Purposes to which the electric plant's surplus has at times been devoted include assistance in establishing an airport, making substantial donations for new fire equipment, and giving free electric service for fairs and festivals that produce benefit to the city. The surplus would be larger but for the fact, in common with many other municipally owned utilities, that the lighting of streets and public buildings is not charged to the taxpayers. Similarly, water for fire protection and the sewer system is furnished free by the municipal water plant.

The report of the Board of Public Works for January 1, 1930, showed total assets of electric and water departments in excess of $350,000, and gives the following data for the electric department during the preceding year:

| | | |
|---|---|---|
| Gross operating revenue | | $59,016.44 |
| Operating expense: | | |
| Production cost | $15,265.74 | |
| Distributing cost | 4,979.26 | |
| General expense | 4,480.18 | |
| Total operating expense | | 24,725.18 |
| Gross operating profit | | 34,291.26 |
| Depreciation | | 10,455.46 |
| Net Profit | | $23,865.04 |

The net profit for the water department for the same period amounted to $516.34, making a total net profit for both departments of $24,381.38. This does not include free water service to the extent of $4,089 for sewage, street sprinkling, fire service and so forth, nor does it include an item for free lighting service for streets and municipal buildings amounting to $7,408.59. The total free service amounts to $11,497.59, which if added to the total net profit for both departments would show a profit of $35,878.94.

In the record of operating conditions for the years 1926, 1927, 1928 and 1929, shown in the table on page 133, it is of interest to note the steady increase from year to year in production, the continued increase in the average kilowatt-hours produced per gallon of fuel oil consumed, and the total operating cost per kilowatt-hour produced,

which shows a steady reduction from 1926 to 1929, when it was 0.86 cents per kilowatt-hour at the switchboard.

### Fourth Unit Installed

In 1930 it became evident that a further increase in capacity was required, and arrangements were made for a Fairbanks-Morse diesel unit of 900 hp., which was installed on November 20. A cash payment of $20,000 was made from accumulated earnings of the plant.

This addition brought the capacity of the plant to its present total of 2,060 hp. The four diesel units with their switching equipment are in a fireproof brick and steel building, while the auxiliary equipment and stored supplies are in the old steam power house adjacent. Two 12,000-gallon steel tanks, outside the power-plant building, above ground, are provided for fuel-oil storage, and feed by gravity the auxiliary day tanks; there is one of the latter for each unit and the oil is accurately metered from each. There is an open-type cooling system, with water pumped from the tower basin through the engines and back over the tower. The latter is of the atmospheric type using spray nozzles. The make-up water is taken from the city mains and does not require treatment. The new units are equipped with air filters, and all lubricating oil is centrifuged at regular intervals.

The distribution system, which is overhead excepting for nearly two miles of underground cable for the ornamental street-lighting system, was completely rebuilt in 1929, all lines on the main streets being moved to alleys.

OPERATING DATA ON HIGGINSVILLE MUNICIPAL ELECTRIC PLANT

| | 1926 | 1927 | 1928 | 1929 |
|---|---|---|---|---|
| Energy generated, kwh | 729,762 | 883,879 | 1,187,493 | 1,733,400 |
| Fuel oil used, gal | 86,449 | 102,150 | 128,100 | 167,140 |
| Average kwh. per gal | 8.44 | 8.65 | 9.02 | 10.3 |
| Lubricating oil used—gal | 1,357 | 1,504 | 2,284 | 2,037 |
| Meters | 786 | 827 | 865 | 968 |
| Load conditions | | | | |
| Station peak load—kw | 240 | 320 | 380 | 620 |
| Station minimum load—kw | 30 | 30 | 30 | 55 |
| Average annual station load factor—per cent | 34 | 31 | 35 | 31 |
| Operating costs— | | | | |
| Fuel | $4,931.43 | $5,127.51 | $5,887.92 | $7,964.64 |
| Lubricating oil | 825.15 | 774.93 | 1,209.12 | 1,107.31 |
| Waste | 54.10 | 55.46 | 73.58 | 66.60 |
| Superintendence and labor | 4,130.00 | 4,173.20 | 4,170.00 | 4,650.00 |
| Supplies and repairs, engines | 302.25 | 408.50 | 926.15 | 648.58 |
| Supplies and repairs, other equip. | 9.74 | 30.45 | 135.05 | 284.19 |
| Heating building | 49.44 | 60.67 | 42.85 | 69.93 |
| Total production operating cost | 10,302.11 | 10,630.72 | 12,433.87 | 14,789.94 |
| Operating cost per kwh | 0.0148 | 0.0120 | 0.0104 | 0.0086 |

# Providing Forests for the Future

## *A Project of Educational and Economic Value*

A PRACTICAL demonstration started in Indiana a little over two years ago and, already extended into other states and into Canada, looks to conversion of barren spots of the earth into richly productive acreages while simultaneously restoring to youth its primal rights to the deep satisfaction of "delving." Frank S. Betz, of Hammond, Ind., business man and world traveler, friend and patron of boy and girl organizations, is author of the experiment, which started with an offer to the superintendent of schools in Hammond to furnish a half-million pine, spruce and arbor vitae tree seeds to be planted by students. The immediate demand on the part of school children so far exceeds the original offer that over 2,000,000 were given out and planted in Lake County during 1929. Over 8,000,000 tree seeds were given out and planted by the same children in 1930.

This was only the beginning, however. The Division of Forestry, Indiana Department of Conservation, is authority for the statement that to September, 1930, Mr. Betz had provided over 62,500,000 tree seeds, which have been planted by 400,000 school children in the United States and Canada. Encouraged by the enthusiastic reception of his seed offer, the donor early in the autumn enlisted the support of the Indiana and other state divisions of forestry in a nation-wide walnut planting campaign in which efforts are being made to enlist not only every Boy and Girl Scout and school child of the state, but also sportsmen, business men, farmers and civic organizations. The latter are asked to sponsor public planting programs in city parks, along road approaches, on stream banks and on waste areas.

### Walnut Culture

The walnut is the hardiest of all native trees. It is also the most commercially valuable as timber and in addition yields an annual crop of nuts for which there is an established demand. Mr. Betz's offer is estimated by state officials as meaning a probable addition of three-quarters of a million dollars to the wealth of the state. In addition to his gift of tested nuts for planting, Mr. Betz is devoting his own time and that of his office staff to furthering the campaign, and is using, as he has done for several years, his large farm for experimental planting purposes.

He has studied the so-called famine countries where destitution has notably followed complete deforestation. He has recently traveled over his own state, and other parts of North America, examining thousands of acres of bare and idle land. Mr. Betz recently declared that "if the people of Indiana and other states east of the Mississippi, with the many counties requiring increasing millions of dollars of state aid yearly, would only stop and consider that this great drain of money must continue until these vast acreages of abandoned land are reforested and brought back to a high state of cultivation, as they did in Europe 1,000 years ago, every man would take off his coat and get busy."

Fifty thousand black walnuts were planted by the pupils in the Hammond schools last month; 200,000 were ordered by the Chicago Forest Preserve District, of Cook County, Ill. Seed nuts and seedlings are being made available to places all over the country in response to the requests received.

"To give some idea of what walnut trees are worth," said Mr. Betz in a recent interview, "seventy trees were sold in Missouri last May for $1,500. Walnut trees set zigzag will grow 192 trees to the acre with little or no expense, and the market value per tree will doubtless be doubled in 1980." Emphasis in the whole campaign, however, is placed upon the educational rather than the economic aspects of the enterprise, and wisely, for the children who reforest the abandoned land of the nation with their own hands today, will not ruthlessly denude it when they have become the citizens of tomorrow.

# Put "Drawdown" in Your Specifications for Water Wells

By HOWARD O. WILLIAMS
Assoc. M., Am. Soc. M. E.

OWING to the multiplicity of methods used by different well drilling contractors to obtain results which are in most cases apparently equal, one of the hardest tasks which face many conscientious consulting engineers is that of writing well specifications. The task is less difficult where the wells end in rock formations; but where the aquifer is a sand or gravel stratum, the problem is immediately complicated because materials and methods used in developing such wells differ widely and the results obtained are equally variant. The problem now arises more frequently, also, in view of the fact that proportionally more wells are being finished in sand and gravel formations than in rock strata each succeeding year because of the superiority of the wells in unconsolidated formations in yield, head, cost, and quality of water.

## Fair Specifications

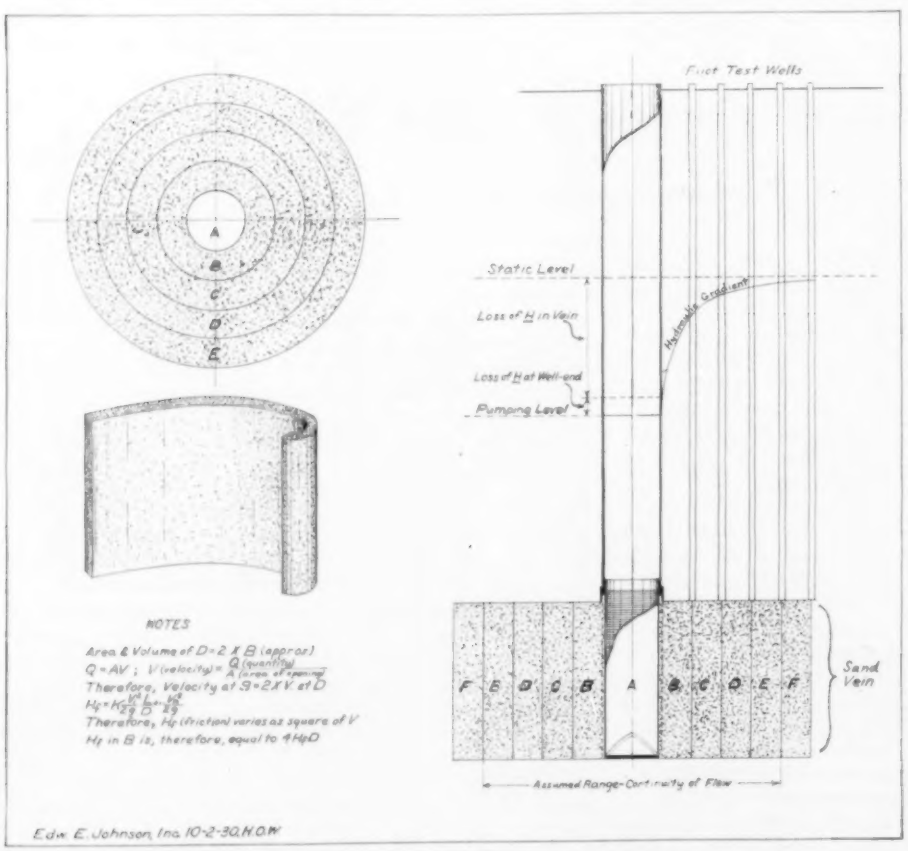
Most engineers have developed well specifications which cover the important details of materials to be used and certain steps in construction, such as casing-off undesirable strata, seating or sealing casing at certain points, etc. They have been found workable and free from undue limitations on the contractor. Others have been carried to an extreme where they defeat their purpose by leaving little to the contractor's judgment, thus seriously hampering him in many cases, especially if unexpected conditions are encountered. Some have even gone so far as to state practically every detail of materials and methods, leaving nothing to the judgment of the contractor, and at the same time requiring the contractor to guarantee the result. This is of course very unfair and undesirable. What should be aimed at is the preparation of specifications that will meet sanitary requirements, allow the contractor considerable leeway for using his judgment, and obtain for the client a well which will deliver the required quantity of water as economically, dependably, and permanently as possible. Doing this is no easy task, but it can be accomplished best by keeping in mind several major considerations, most important of which are:

1. Definite specification of all materials which have direct bearing on the successful completion or operation of the well.

2. Avoiding the rigid specification of materials or methods which militate unduly against certain bidders—such as materials not manufactured for the open market or methods specially developed by one or a few contractors.

3. Definite specification of the results required, leaving details of methods as much as possible to the judgment of the contractor, thus placing responsibility for the conduct of his work squarely upon his shoulders.

4. Provision of a penalty or bonus for inferior or superior results where such are largely obtained through


Test Wells
A
B
C
D
E
Static Level
Loss of H in Vein
Loss of H at Well-end
Pumping Level
Hydraulic Gradient
NOTES
Area & Volume of D=2 X B (approx)
Q=AV ; V (velocity) = Q (quantity) / A (area of opening)
Therefore, Velocity at B=2 X V at D
Hf = Kg (v²a - v²b) / 2g
Therefore, Hf (friction) varies as square of V
Hf in B is, therefore, equal to 4 Hf D
F E D C B A B C D E F
Sand Vein
Assumed Range-Continuity of Flow
Edw. E. Johnson, Inc. 10-2-30. H.O.W.

THIS DIAGRAM ILLUSTRATES THE THEORY OF THE NORMAL HYDRAULIC GRADIENT OR SLOPE IN A WATER WELL PRIOR TO DEVELOPMENT

At the upper left corner is a top view of the water-bearing stratum with the vein marked off into equally spaced cylindrical sectors. Below, one of these sectors is represented as being opened up. At the right is shown a cross-section of the well with small pilot wells sunk to measure the water level at the outer edge of each sector of the sand vein, thus establishing the points of the hydraulic gradient of the vein during pumping at a given rate. The symbol "H" refers to "head"; the symbol "Hf" refers to "friction head or loss." It is the purpose of proper finishing equipment and development processes to change the nature of the portion of the stratum adjacent to the well end, where losses are greatest, in order that the permeability will be increased so that the reduction of head as the well is approached is less abrupt and the total reduction, or "drawdown," thereby reduced

the contractor's inferior or superior workmanship and equipment.

5. Avoiding the requirement of unreasonable guarantees, such as guarantees of the chemical quality of the water. The contractor cannot change the water in the various strata, and any such guarantees result only in confusion and unduly high prices. The most that should be required as to quality of water is the obtainment of the water in a certain stratum uncontaminated by other waters and safe from pollution from surface drainage.

### Drawdown—a Temptation

During the past five years the writer has read at least fifty specifications for wells, written in most cases by first-class engineers, and, as far as can be recalled, only one of these has mentioned the vital factor, *drawdown*. They all read something like this: "The well shall deliver so many g.p.m and shall be tested—etc.—It shall be screened with a screen of such diameter and such length, etc." Sometimes the specifications go into great detail regarding materials, methods, etc. But not a word about *drawdown!*

What is the result? Less than a year ago a well driller of recognized ability and integrity was bidding on such a job and he remarked to the writer, "It's a big temptation for me to put a cheap screen in a job like that and not spend any time developing it, because all I have to do is get 500 g.p.m. even if I have to pull it down to the bottom. That's just what some driller is likely to do and take the job at a low price. When will these engineers learn that it isn't any more reasonable to require so many g.p.m. from a well without mentioning drawdown than to call for so many g.p.m. from a pump without mentioning the head?"

The only answer that could be given him was to say that it was doubtless caused by a feeling among the engineers that they did not know how to specify the drawdown without danger of imposing an unfair burden on the bidders.

### A Suggested Specification

The writer has given this matter much consideration and has developed a plan which appears to have promise of practical value. The idea is to have the specifications read somewhat as follows:

"The well shall deliver ——— g.p.m. with a drawdown not to exceed ——— feet at the end of a continuous pumping test of ——— hours duration. If the drawdown exceeds this amount, there shall be deducted as a penalty from the contract sum due the contractor the lump sum of $——— for each full foot of excess drawdown. If the drawdown is less than the amount specified, there shall be paid to the contractor as a bonus an additional lump sum of $——— for each full foot by which the drawdown is reduced, provided, however, that in no event shall the total penalty or bonus exceed $——— (or ——% of contract sum). The well shall be—etc."

The lump sum of penalty or bonus per foot may be figured by the following formula:

A=(g.p.m./8.77 x R) K, in which
A=amount of penalty or bonus in dollars and cents.
g.p.m.=g.p.m. which will be pumped from the well.
t=average hours of pumping per day.
R=power rate per kwh. in dollars.
K=a coefficient between 1 and 10. The use of 10 would represent slightly less than the full capitalized saving over a life expectancy of 15 years for the well. The use of 1 would represent only 10 per cent. As a conservative working average, the use of 6 or 7 would be suggested. (Thus the formula assumes a wire-to-water pumping efficiency of 60 per cent—a conservatively high average, which is exceeded in few deep-well plants.)
Using K=6, this sum is then approximately 60 per cent of the capitalized saving or loss over a life expectancy of 15 years for the well.

The engineer estimates the drawdown at a reasonable point based on other wells in the territory, or test wells. If the contractor fails to meet this, the well is worth less to the purchaser. If the contractor does better than this, the purchaser can well afford to pay extra for it on this basis, because the saving in power will refund much more than the extra cost, and the purchaser is in addition a clear gainer because several years are added to the life expectancy of the well when drawdown and velocity are materially reduced, upkeep costs are less on both well and pumping equipment, and there is a greater reserve available in case of increases in future demands.

This appears to be the most rational and scientific solution of this problem that has appeared to date. It provides a protection for the engineer's client and a reasonable incentive for the contractor to bring his work up to a high standard without placing an undue burden upon him. It invites the contractor to use better materials and more thorough and efficient methods of development. It is worthy of the careful consideration of every engineer.

### A Typical Case

As an application of this, let us consider the following case.

An industrial user will require 500 g.p.m. over an average pumping period of five hours per day. Specific capacity of one other adjacent well is found to be 20, and of another 21 gallons per foot of drawdown below static level. Specifications on the new well will require 500 g.p.m. with drawdown not to exceed 25 feet. Bonus or penalty for each foot more or less of drawdown will be:

A=(500/8.77 x 5 x $0.03) 6=$51.30 or, for the convenience of round numbers, $50.00.

In case the well passes the required test with a drawdown of only 18 feet, for example, the sum of $350 will be paid in addition to the contract price. In case the drawdown is 30 feet, the sum of $250 will be deducted from the contract price. The maximum penalty or bonus will be fixed by the engineer to fit the particular case, usually not to exceed a certain percentage of his estimated cost of the job or of the contract price, probably about 10 or 15 per cent. Thus, the penalty or bonus for a $2,000 well would not exceed $200 or $300. This prevents the occurrence of abnormal conditions or circumstances from placing an excessive burden upon the contractor. In any event, the engineer's client cannot lose.

This offers a means whereby engineers may incorporate the factor of drawdown in their specifications to the definite advantage of their clients and with fairness to drilling contractors, particularly in wells finished in sand and gravel formations in which the materials and methods used in development have such vital bearing upon the yield of the wells.

### Mussolini Prefers Public Works to Doles

***In a radio message broadcast in America on New Year's Day, Premier Mussolini of Italy added his testimony to that of the growing list of statesmen and economists advocating increased public works activities in unemployment emergencies. Said Signor Mussolini: "I am opposed to the dole. I prefer relief in the form of public works which substantially increase the efficiency of our national economic equipment. The dole tends to accustom the workers to idleness."***

# The Outlook for City Transit

*Some Ideas of What the Future May Hold for Street Railways and Other Means of Urban Mass Transportation, as to Use, Equipment and Mode of Operation*

By H. U. WALLACE
Municipal Consultant; Former General Manager, Department of Street Railways, Detroit, Mich.

DURING the past ten years, numerous street-railway companies have failed, hundreds of miles of street-car tracks have been abandoned, and a large number of railway properties have been sold for scrap, leaving many towns without proper transportation facilities. True, when the property has failed and been abandoned, some kind of transportation system has sprung up over night; but too often the city or town has been badly crippled for transportation facilities and irreparable damage has been done to business and to property. Any town or city without a thoroughly organized, first-class transportation system is at a great disadvantage. Property values are adversely affected—the larger the city, the more seriously.

We hear a great deal of talk today to the effect that the street-car is doomed and that we cannot afford to rebuild any street-car lines; that as fast as they wear out they should be abandoned and busses substituted. I think that people who have come to this conclusion have not given the matter as careful study as they should.

There are many cities in the United States in which the street cars will continue for a great many years as the chief method of mass transportation. It is true there are some lines in all cities where riding has fallen off on account of centers of population shifting, new factories springing up in other sections, or old factories being abandoned; and when the time comes to reconstruct tracks on these lines it will be found beneficial to substitute the electric coach (or trackless trolley), or the gasoline bus. Certain lines or portions of lines must, however, be operated for some time at a loss, until the population increases on these lines.

## Varieties of Equipment

I believe the street car, the trackless trolley, and the bus all have their places in the street transportation system of the cities.

*Street Cars.*—Street-car service today to be successful must have modern equipment. Cars should not weigh over 30,000 pounds. They should be built as low as possible to make it easy for passengers to get on and off. They should be well motored, should not, if possible, weigh more than 250 pounds per horsepower, and should be able to accelerate at the rate of at least 2 miles per hour per second. They should have good floors and comfortable seats and be well lighted.

*Busses.*—In establishing bus lines, care should be taken not to start with too large equipment, beginning generally with 20-passenger busses and using this size until it is necessary to run on closer than two minutes' headway. It is better to have small busses on a frequent schedule than large busses with longer headway. When larger busses come to be required, the small busses may be used on new lines or for feeder service. On heavy lines the 40-passenger bus is appropriate and, I believe, is sufficiently large to take care of any traffic that a bus line should handle.

*Trackless Trolleys.*—The trackless trolley, or electric coach, can operate at high speed on any portion of the road within a 24-foot strip, that is, within 12 feet of each side of the trolley wire; at slow speed it can operate from 15 to 18 feet from the wire. This allows the coach to pass other vehicles that are moving slower, and also to pull in to the curb to unload and pick up passengers, the same as gasoline busses. The trolley wire is placed half-way between the curb and the center of the street. The trackless trolley is more economical of operation than either the street car or the bus.

## Street Cars in Place of Subways

There has recently been developed in Detroit a new system of street-car service in which the street car has become an express car and for several miles out from the center of the city makes only occasional stops. The local traffic is taken care of by busses, and there is an interchange of passengers between the busses and the street cars.

I believe that this service can be very much improved by cutting out the local stops in the express territory, with one point at each end of the express line where passengers may transfer from car to bus.

With a system of progressive traffic lights, when a street car enters the express district and gets in step with the lights, it will be able to make a speed of 25 or more miles per hour without a stop, safely, through the entire express district. With traffic lights at all the corners, danger of accidents will be minimized. This will also speed up the automobile traffic on the street and increase the capacity of the street for all kinds of transportation service. Either the bus or the trackless trolley can be used on the pavement outside of the street-car tracks to handle local passengers.

This express street-car service will give people in the outlying districts service equal to, or better than, the subway at an enormous saving in construction costs. Of course this express service can be put on only where there is a wide roadway.

In cities that use this system it may be necessary in the future either to put all the street cars underground in the central business district, or, better and cheaper to construct a number of elevated streets for automobile traffic, allowing the street cars and busses to operate on the surface.

## Financing

The advantages which the city's borrowing capacity affords its water works, etc., ought to be extended to cover

the transportation system. In a great many instances private transportation companies are called upon to pay from 6 per cent to 8 per cent for new capital (if they get it at all), whereas the borrowing capacity of the municipalities would enable cities to put money into the property at the usual municipal rate of interest. I believe it is perfectly proper that any city should own its local transportation system, issuing sufficient bonds to purchase the present system, after obtaining competent advice as to its value, and put it in first-class condition. The city can then either operate the system itself or contract with a competent company on a fixed-fee basis.

Personally, I believe the taxpayer should pay the interest on these bonds and provide for the sinking-fund requirements out of taxes, and the fare charged should pay operating expenses and maintenance. This will reduce the cost of a street-car ride from one to three cents below the present cost in most cities, and in some cases even more will be saved by this means.

### Method of Operating

The one important feature of the whole operation must be the elimination of the transportation system from politics. There are a number of ways in which good results may be accomplished. One is for the city to establish a street-railway commission composed, say, of five members: one a banker; one a lawyer; one the head of a large manufacturing or mercantile company; the fourth member the mayor of the city; and the fifth the president of the company and a practical street-railway or transportation man. These members would be appointed by the mayor, and at the expiration of each one's term of service, the mayor would nominate a new member of the commission subject to the approval of the other members.

There should be a fund to take care of any operating and maintenance expenses that the fare might fail to provide for, the fare to be automatically increased whenever this fund got below half of its original amount, and automatically decreased whenever the fund should become 50 per cent greater than originally.

### Contract Operation

If the city desires to contract with a competent operating firm to supervise the operation of the utility, it should agree with this firm on a fixed fee per annum, in most cases not to exceed $50,000 per year and expenses, decreasing with the size of the property to possibly a minimum of $5,000 in a town of approximately 50,000 people. The city should have a commission to approve the annual budget, specify the service desired, and authorize the increase in rates when necessary; a competent railway expert should be a member.

# Capacity and Economy of Various Forms of Transit in Cities

*By* MAJOR JOHN P. HALLIHAN
**Chief Engineer,**
**Detroit Rapid Transit Commission**

THERE is an economic boundary to the use of private automobiles in cities which is created by their own traffic interference as street capacity is absorbed. This boundary moves out from the center as the city expands, and results in throwing a continually increasing burden on the public transit facilities. Nothwithstanding the facilities offered for suburban residence by wide roads leading to the outer territory, surveys in 1921, 1926 and the traffic survey of 1930 show that about 90 per cent of the population of the Detroit region stays within reach of the public transportation facilities, and that those facilities carry two-thirds of the persons moving to and from work in the rush hours, and to and fro in business and shopping and recreational activities in the other hours of the day.

### Wider Thoroughfares Benefit Public Facilities

A well-planned system of major thoroughfares of adequate width is of equal importance to the public transit facilities. It has been demonstrated that under similar traffic conditions in a street 72 feet wide, street cars move at a speed of 10.6 m.p.h., in a 100-foot street at 12. m.p.h., in a 120-foot street at 14.4 m.p.h., a betterment of 36 per cent in favor of the 120-foot thoroughfare. It is possible, also, in a 120-foot street to put the street-car facilities in a safer and more accessible position by moving them from the center lanes to the third lane from the curb. In this position the car rider has to cross only one moving traffic lane to reach a safety platform which also serves as an isle of refuge for pedestrians crossing the street. This arrangement permits through traffic in the center lanes of the street to continue moving without endangering passengers boarding the cars or creating interference with street-car movement. A similar arrangement may be applied to the 204-foot street if carried into the city through areas where cross-streets must be left open.

### Capacity of Various Forms of Transit in Cities

A well-balanced plan of passenger service will make use of the various forms of transit to the limit of their respective usefulness.

The respective value of the various facilities has been given prolonged and careful study by the Rapid Transit Committee of the American Electric Railway Association.

This committee has calculated from theoretical premises, checked by records of actual performance, the practical capacity in passengers carried in the maximum hour in half of a 100-foot street when used by the various forms of passenger transport.

When the street is given over entirely to automobiles, its maximum carrying capacity in one direction in three lanes is 4,100 passengers, compared with 7,305 as the maximum observed capacity of one lane of busses; with 13,500 maximum for one lane of street cars; with 60,000 as the capacity of a local rapid-transit track, and with 100,000 to

120,000 as the capacity of one local and one express track.

It is apparent that if we wish to secure the widest use of the automobile, we must provide ample roadway space. When that provision becomes unattainable at reasonable cost, then we have reached the economic limit of the use of automobiles in city streets, and must turn to facilities occupying less street space and capable of transporting a greater volume of passengers in the same period of time. When the volume increases beyond the capacity of the surface facilities, then mass transportation on rapid-transit trains on an exclusive right-of-way must be provided.

Ordinarily the economic limit also coincides with the point where the differential between the cost of a rapid-transit facility on the surface and the cost of the same facility in an underground structure becomes insufficient to buy the right-of-way needed for the wide one-level street.

### Elevated Roadways

It has been frequently stated that the space sought for increased use of automobiles might be best obtained by the creation of elevated roadways. This might be the case if the construction cost of the elevated structure were the only thing to be considered. But it is necessary to add the cost of settlement of claims of damage to property by reason of deprivation of light, air and access. The total cost may exceed considerably the cost of securing additional right-of-way on the street level with its many attendant advantages, present and future. As a matter of fact, it is generally necessary to acquire additional width on the surface level before the construction of elevated roadways becomes practicable.

Under the conditions that usually prevail in the heart of cities when excess space is sought for automobiles, the ultimate aim is to bring more people into the district of greatest activity. Measured by the yardstick of passenger-carrying capacity, elevated roadways are less efficient than superhighways or elevated railways.

A study of the comparative advantages in amount of passenger transportation created at maximum capacity of an elevated five-lane motor roadway, an elevated two-track railway for rapid-transit operation, and a superhighway 204 feet wide over routes of the same length—12.5 miles—serving the same territory in Detroit, indicated very clearly that the elevated roadway is least valuable as a passenger carrier and the most costly per unit of passenger transport created.

This is not to say that the elevated roadway is not sufficient in its proper field, which appears to be as a high-speed artery between cities of importance.

### Saturation of Street Space

The intensive building development in the central business district, characteristic of all our cities, always accompanied by a further concentration of financial, mercantile, hotel and theatrical activities, results ultimately in saturation of the available street space in the shopping hours as well as in the morning and evening peak hours. The result of such saturation is to stimulate the creation of business sub-centers in residential neighborhoods at the junction of important thoroughfares served by public facilities and easily accessible to automobile traffic.

The sub-centers rapidly take on in a lesser degree the characteristics of the central area in point of concentration of mercantile and other activities, setting up new currents of travel which avoid the central congested area. The natural consequence is to retard the growth of business in the downtown area. Creation of parking space is effective as a remedy only up to the point of saturation of the travel lanes in the streets. Beyond that point restoration of accessibility requires the creation of mass transit facilities operating independently of surface traffic interference.

This process of absorption of street space is familiar to New York and Chicago. It has been in process in Detroit for five years. In the year from 1924 to 1925 traffic in and out of the downtown business district increased 11 per cent, in the next three years at the rate of 2.6 per cent per year, and in the succeeding two years at the rate of 1.3 per cent per year; or, it had reached a point of practical saturation.

### Economy of Mass Transit Facilities

The average fare on urban railways is now about 8½ cents, and on busses 10 cents, irrespective of length of route. The average cost of running an automobile is now about 6 ½ cents per mile. If we assume an average distance of five miles from the outer limit of dense traffic to the center of business activities, then the motorist pays 32 cents in his private automobile—excluding parking charges—for the same ride that he can get on the public facilities for a maximum of 10 cents.

The advantage that he gains in comfort and exclusiveness is being constantly reduced by the cumulative effect of the increase in traffic density, the attendant reduction in speed, and the abolition of free parking space, until finally it disappears altogether and the use of the automobile becomes an inconvenience and a waste of time. When this occurs, the motorist will be greatly disappointed if he fails to find ample and cheap garage facilities available for his car at the terminus of the wide roads and a comprehensive transit facility equally available to carry him as a passenger to any point within the area of industrial and business activity and to continue to answer his various transport needs throughout the business day.

It is the intent of the Detroit plan to accomplish this result with its system of high-speed motorways in the outer area and a limited system of rapid-transit trunk lines coordinating on a universal fare with the surface rail and bus facilities in the inner area. It expects to realize the greatest economy in expenditure by thus utilizing each element of transportation in its particular field to the limit of its efficiency on a predetermined and balanced plan.

EDITORIAL NOTE.—The foregoing article comprises the concluding portion of an address on "The Economics of City Traffic and Transportation," delivered before the Institute of Traffic Engineers, in New York, January 20, 1931. Copies of this paper and of others delivered at the January meeting are obtainable on application to Hawley S. Simpson, Secretary-Treasurer, Institute of Traffic Engineers, 175 Fifth Avenue, New York. A news item regarding the organization of the Institute appears on page 112 of this issue.

### Important Articles on Traffic and Transportation to Appear in the 1931 Municipal Index:

Planning Highways and Street Intersections to Meet Modern Traffic Needs, by Burton W. Marsh, Traffic Engineer of the city of Philadelphia

Methods for Studying Traffic Control Problems, by Dr. Miller McClintock and Dwight M. McCracken, of the Albert Russel Erskine Bureau for Street Traffic Research

The Economics of Traffic and Transportation Facilities in Urban Areas, by Charles Gordon, Managing Director, American Electric Railway Association

Airport Planning, by Colonel Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, United States Department of Commerce

# Construction of the New Otay-San Diego Water Line

***Steel Pipe Welded Into Long Sections on the Job***

MAKING A TIE-IN WELD
Note the roughness of the terrain

THE phenomenal growth, both in territory and population, of the city of San Diego, Calif., within the last 20 years has repeatedly brought that city face to face with a problem of furnishing a water supply in keeping with its rapid increase. For this reason the city has recently made the third major improvement since 1914—the construction of a large transmission line known as the Otay-San Diego line, which is to bring water from the Otay reservoir, a distance of approximately 19 miles. This new line is constructed of steel pipe fabricated by the electric arc welding process.

The new steel pipe line is to replace a wood-stave line which has been in service since 1901. It will have a somewhat greater carrying capacity due to its larger diameter and greater pressure capacity. The new line will bring water directly from the Otay reservoir to University Heights reservoir, and indirectly from the Morena and Barrett reservoirs on the Cottonwood River and the Lower Otay reservoir on the Otay River. The old wooden line had a capacity of 10,000,000 gallons daily, but improvements at the Morena and Barrett reservoirs make it necessary for the new line to handle about 17,000,000 gallons daily. In the future, booster pumps will be installed to raise this capacity to 25,000,000 gallons per day, two and one-half times the present capacity.

Approximately 86,000 linear feet of electric arc welded steel pipe will be used in this new water line. About half of this footage will be 40-inch pipe, and the other half 36-inch pipe. Varying thicknesses of plate are used in the fabrication of this pipe. Of the 40-inch pipe, about 31,000 feet will be made of 3/16-inch plate; about 11,000 feet of ¼-inch plate; and 830 feet of 5/16-inch plate. Of the 36-inch pipe, 21,560 feet will be of 3/16-inch plate; 13,340 feet of ¼-inch plate; 4,910 feet of 5/16-inch plate. and 3,100 feet of ⅜-inch plate. These varying thicknesses were necessary to meet the varying pressure requirements. All of the pipe used in this line was manufactured by the Western Pipe and Steel Co., of San Francisco.

In the construction of this line it was necessary to tunnel through four large hills. These tunnels were cut 6½ feet high and 6 feet wide. The longest tunnel is 2,150 feet long.

### Electrically Welded Pipe Used

All the pipe used in this line was of the electrically welded steel type, and, with the exception of that for the tunnel, all was dipped in hot asphaltum and wrapped with special felted fabric. The pipe for the tunnels was dipped but not wrapped. When the city of San Diego

LAYING THE NEW STEEL PIPE ON THE OTAY-SAN DIEGO LINE
A section of the old wood stave line as seen in the foreground

asked for bids for the pipe, specifications for three kinds of pipe were invited; that is, for electrically welded steel pipe, cast iron pipe, and concrete. No bids were received for concrete pipe, and only one for cast iron pipe. It is presumed that this is due to the varying and high pressure heads encountered on the line, and the difficulties presented by the rugged characteristics of the terrain. There were a great number of horizontal and vertical angles in the line. It is estimated that the savings afforded by the welded steel pipe if placed at compound interest would amount to a sum sufficient to duplicate the line in twelve years. This carried on for the life of the pipe, which is estimated to be between forty and fifty years, would mean a saving of several millions of dollars.

### Fabricating the Pipe

All joints on the line were arc welded. The pipe is equipped with bell-and-spigot joints. On the heavier pipe two beads are used, and all joints are welded on both the inside and the outside. The pipe sections as a general rule are about 30 feet long, but vary with the terrain. It is lined up and arc welded in sections, then tied into the main line. Stable arc welders manufactured by The Lincoln Electric Co., Cleveland, Ohio, were used on this line.

The use of the electric arc welding process in the fabrication of this line not only kept the cost to a minimum, but also made it strong and rigid. In a test of 10 miles of this line, during construction, only one major leak was found. The sharpness of the turns and the roughness of the terrain were no difficulty for this type construction, and required no special precautions or special constructed pipe. Arc welded construction of pipe lines has proved itself successful through extensive use and inexhaustible tests. These lines have been used for all types of liquids and gases.

# Better County Government in Sight

THE county, the familiar "dark continent of American politics," is experiencing some significant, though localized, symptoms of political improvement.

With the adoption of the manager form of government by Arlington County, Va., at a recent election, spread of the manager plan, now in effect in 442 cities, to counties, is definitely under way, according to Dr. Russell Forbes, Professor of Government at New York University and Secretary of the National Municipal League.

Arlington County voted for a change in government by two to one, and for the county manager plan, in the event of a change, by about five to one. The plan will go into effect January 1, 1932.

Other counties which are experimenting with the manager plan in one form or another include Alamac, Cleveland, Davidson, Guilford and Robeson Counties in North Carolina; and Albemarle, Augusta, Fairfax, and Pittsylvania Counties in Virginia.

In Ohio another phase of county betterment has come to the fore in the form of a constitutional amendment proposed by a state-wide conference of representatives from the various commercial, civic, agricultural and other associations of the state, called together by the Ohio Chamber of Commerce.

Much of the incentive for a change regarding county government in Ohio has come from Cleveland and Cuyahoga County, where that city is situated, and where there has been considerable discussion about unifying the governmental organization.

As the Citizen's League of Cleveland says:

"The Cleveland metropolitan district is probably more nearly one community, geographically, financially and socially, than any similar metropolitan area in the country. Yet it finds itself divided into 12 cities and 43 villages for administrative purposes.

"Fifteen years ago the Citizens' League began the agitation for a reorganization of government in the Cleveland metropolitan area in the interests of efficiency and economy. Every proposal submitted to the General Assembly has met with the vigorous opposition of the public officials and the local weekly newspapers in the suburban area. A Regional Government Committee of 400 was organized three years ago, which sought relief in a modified form, but this legislation was also opposed by the same interests."

The proposed constitutional amendment would supersede Article X, relating to county government. If adopted, it would give the General Assembly power to legislate in this regard. It would enable rural counties to adopt a form of government which the people want, and would enable urban counties to frame and adopt their own forms of government and to exercise municipal home rule powers within the county, but only with the consent of the separate municipalities and townships.

The text of the proposal is in part as follows:

ARTICLE X

*Counties and Rural Municipalities*

Section 1. The General Assembly shall provide by general law for the government of counties, and may by general law provide alternative forms of county government. No alternative form shall become operative in any county until submitted to the electors thereof and approved by a majority of those voting thereon under regulations established by general law.

Section 2. The General Assembly shall provide by general law a method for the formation of rural municipalities, and shall define the powers which may be exercised by them. Such law shall provide one or more plans of government optional with rural municipalities, and the manner in which a rural municipality may frame and adopt or amend its own plan of government in lieu of any statutory plan.

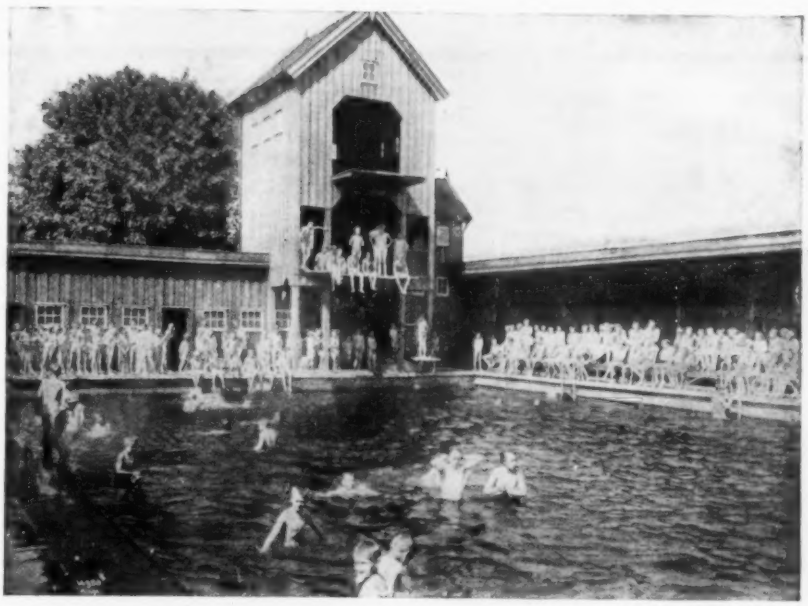
Section 3. Any county may become a charter county by framing and adopting a charter in the manner provided in this Article. A charter county shall be a body politic and corporate, with authority to exercise all powers vested by the constitution and laws of Ohio in municipalities. Except to the extent provided in charters adopted under Section 7 of this Article, no county shall have authority within any municipality or within any township (exclusive of municipal territory therein) to exercise any power not possessed by virtue of general laws relating to counties and county officers, unless the municipality or township shall have given its assent to such exercise. The General Assembly shall prescribe by general law the modes by which such assent may be given; but such modes shall not be applicable in the case of any municipality which by its charter prescribes another mode or modes therefor; the rights of initiative and referendum shall be secured to the people in respect of every measure giving such assent.

Section 4. A county charter shall provide the form of government of the county, shall determine which of its officers shall be elected and the manner of their election, and shall provide for the exercise by the county of all powers and for the discharge by it of all duties appertaining by law to counties and county officers. A county charter may provide for the establishment within the county of administrative districts and for different rates of county taxation among the several municipalities, townships, and administrative districts.

Section 7. In addition to possessing the powers granted by the preceding sections of this Article any charter county having as many as one million inhabitants may in its charter provide for the organization of such county as a municipal corporation under an appropriate designation, and for the exercise by such county, either exclusively or concurrently, of all or of any designated powers vested by the constitution or laws of Ohio in municipalities. But no charter or amendment thereto including provisions for the organization of such county as a municipal corporation, or for the exercise by such county of any such powers shall be adopted unless approved by a majority of those voting thereon (1) in any city having as many as sixty per centum of the inhabitants of the county; (2) in the county outside of such city; and (3) in each of a majority of the combined total of municipalities and townships in such county (not including within any township any part of its area lying within a municipality). Not more than six residents of any one municipality or township in any such county shall be elected to the charter commission thereof.

# Public Baths in Oslo for Health's Sake

***A Governmentally Supported Service in Which Millions of Kroner Are Invested and Which Is Being Extended Throughout Norway***



A MODERN NORWEGIAN PLUNGE

IN Norway, public baths are an institution ranked in importance with the church, the administration of city affairs, the administration of justice, hospitals and sanitation, and the schools; and, like these other public services, the baths are financed from tax funds and public loans. The institutions are regarded almost wholly as a public health promotion measure. To them is attributed the fact that mortality figures for the cities of that country are appreciably lower than those for the rural regions, according to Einar S. Ween, Chief Manager of the Corporation Baths of Oslo. Mr. Ween, who is also Secretary of the Norway Baths Association, and a member of the International Association for Public Baths (as well as a member of the American Association for Hygiene and Baths), presented recently before the annual meeting of the German Public Baths Association a paper in which he outlined this development in Norway with particular reference to his own city.

In Oslo alone, he reported, 5,700,000 Norwegian kroner are invested in public baths, a total which will be increased to 8,700,000 kroner (about $3,250,000) when work now under way is completed. As part of the program for facilities to keep pace with the constantly increased use, the city several years ago undertook the remodeling of its famous Torgvaten baths, erected in 1862. Characteristic of the progressive spirit of all expansion work in this field were visits made by public officials to Holland, England, and Germany for the purpose of studying the most modern bath establishments in those countries; and the architectural competitions for bathhouse designs which followed. The remodeled establishment will be completed in the autumn of 1931, and will then include steam baths, slipper baths, spray baths, and a modern, sanitary swimming pool.

A third part of the building was completed in May, 1928. During its first year's service, it was patronized by 842,000 bathers, nearly half of whom were women. The first quarter of 1929 showed a record attendance of 214,158 patrons, while the corresponding period of 1930 showed a 19 per cent increase, with a total of 253,590 patrons.

The city has a number of other public baths, and two public swimming pools, one of which is used jointly for public and school uses. Another substantial establishment is now under construction, with combined public bath and swimming facilities. The swimming pool, owing to climatic conditions, is still largely an innovation in Norway, steam and other hot-room baths being, historically, a national custom. Now that pools are being introduced in connection with public baths and public school baths, a high standard of sanitation is being effected, with filtration, chlorination, and other purification measures adopted.

It is estimated that during 1931, 1,500,000 public baths can be provided by the city; 884,000 of them hot baths, 325,000 sea baths, and 240,000 school baths—a total which Mr. Ween presents as being not inconsiderable for a city of 260,000 inhabitants.

### Revenue Policy

It is interesting to note that some of these baths are elaborate and expensive in character, and are charged for proportionately. Receipts from the municipal bath establishments, therefore, cover all operating expenses and overhead, and provide for the large numbers of free baths given. The latter include most of the sea and open-air baths, baths for the unemployed, etc.

The Norway Bath Association, of which Mr. Ween is the active executive, was formed in 1922, with aims similar to those of the American Association, but with a function more vital to the welfare of the public. This is by reason of Norway's being a large country with a small population, and to a large extent still lacking in modern home sanitary facilities. The Association actively promotes closer cooperation between the state and communities, and gives financial aid to new baths in town and country districts throughout Norway. It has compiled statistics showing existing bath provisions for the country as a whole, and has mapped out a plan for combined school and public baths to meet existing needs. Meantime it is doing a large and important work in educating the small town and rural population to the necessity for physical cleanliness, working chiefly through the country schools.

# Safety on the World's Streets

## By Means of Traffic Planning and Control

**IN BERLIN**

**Dogs are not permitted to run loose. This is one of the refinements of planning for pedestrian safety as well as for safety of the *hunde*. The animal owner does not have to read to be able to understand the signs**

**MIRRORS FOR MOTORISTS IN PARIS**

**The large mirrors erected on many street corners are not designed primarily to appeal to the vanity of Parisians but to safeguard their lives at dangerous intersections. A typical installation is illustrated**

**PROTECTION FOR PEDESTRIANS IN STOCKHOLM**

**Here is a glimpse of one of the few cities in the world where special street signals have been installed to control the movement of travelers afoot. The system is proving efficient in lowering traffic accidents in crowded districts**

## *Here and There*

## *WITH TRAFFIC OFFICERS*

**IN KANSAS CITY, MO.**

**Captain Newton Reynolds gives special attention to his friends at crossings**

**A PIONEER IN FRANCE**

**The first woman to do police traffic duty in France is on the force in the resort city of Le Tourquet, where she has the station of honor in front of the Grand Casino**

**IN ROCHESTER, N. Y.**

**The idiosyncracies of the weather are tempered for the traffic officers by officially designated uniforms**

**ALSO IN PARIS**

**When cold winds begin to blow there, the traffic towers are heated by gas piped from the street-lighting supply**

**TURKEY, MODERN STYLE**

**The police officer shown at the left spends his days standing guard over the one traffic signal installed so far in Stamboul**

## Motor Age Highways

**The map at the left is reproduced from a larger print recently published by the New Jersey State Highway Department. It shows the proposed highways and main connecting roads in the vicinity of the new Hudson River Bridge. Inspection discloses types of intersections.**

**The plans below show several such types of intersections. The following notes accompany the Highway Department's group of plans of these and twelve other special intersections constructed or recently designed for the New Jersey State Highway System.**

All islands within roadway width have low curb.

Later designs show roadway island curb 12 feet wide, of white concrete, and interior of island of black concrete.

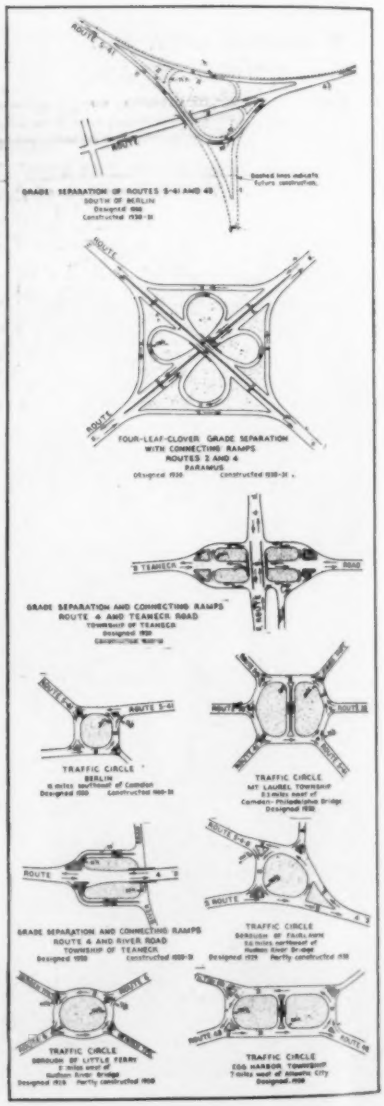
Islands are floodlighted in direction of traffic.

Interior of traffic circles in one plane.

Maximum bank ½-inch per foot.

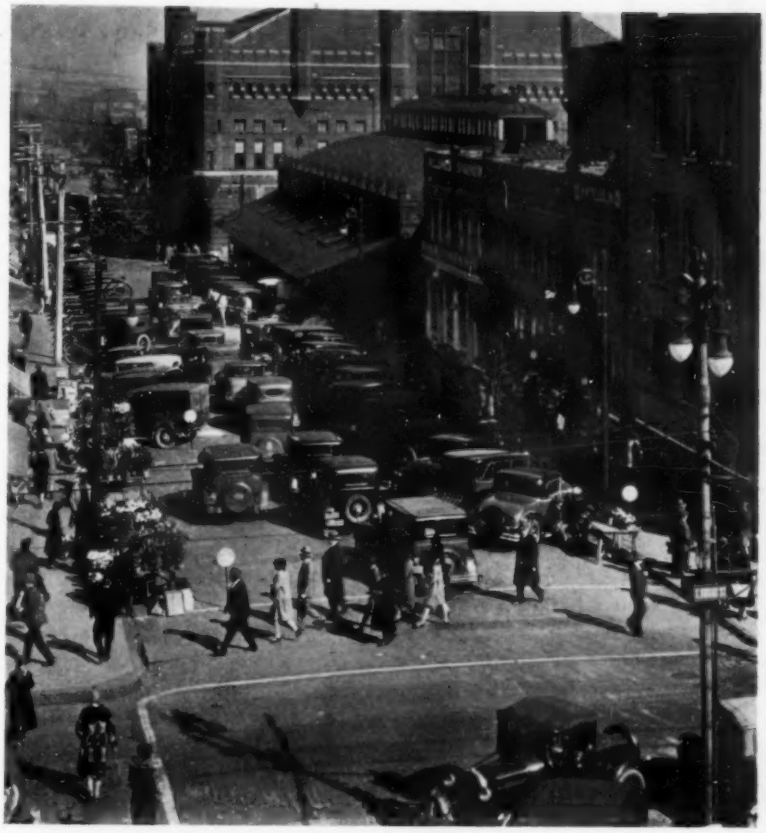
All surfaces of concrete.

All widths shown indicate distance between curbs.

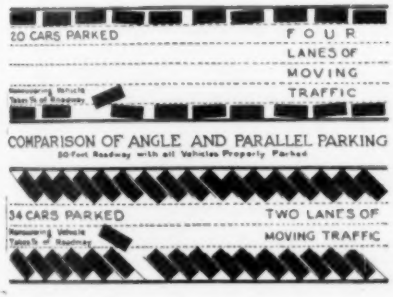


## The Traffic Situation in Richmond, Va.

**The Traffic Survey recently completed by the National Safety Council for the city of Richmond, Va., made by the Council as a community service and as a means of broadening its own understanding of the complex, present-day street traffic accident problem, is presented in published form as representing a new advance in traffic survey making. The illustrations on this page are from the section devoted to the parking problem, to which especial attention has been paid, and the section on loading platform requirements.**

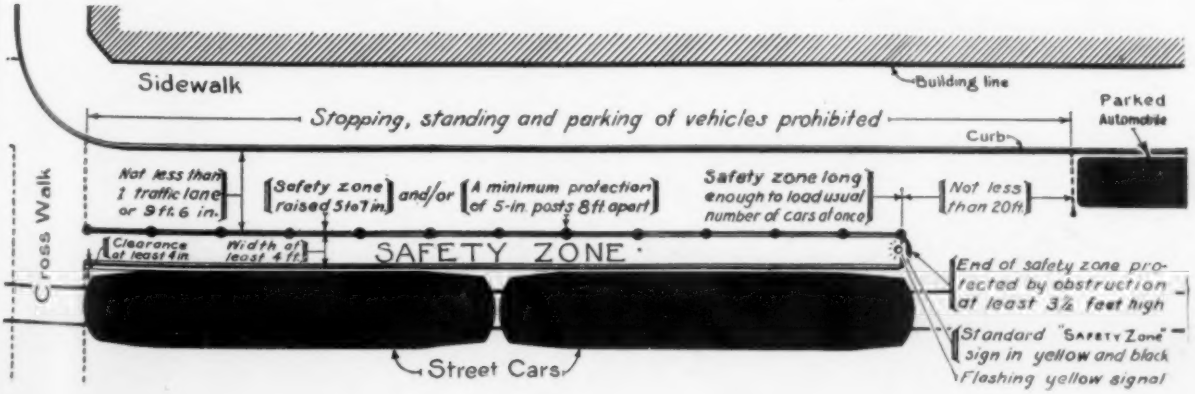


**The photograph is a typical view of traffic in Sixth Street looking north from Broad. It shows how a vehicle entering an angle parking stall obstructs all movement in a single line of moving traffic.**


20 CARS PARKED
FOUR LANES OF MOVING TRAFFIC
COMPARISON OF ANGLE AND PARALLEL PARKING
50-Foot Roadway with all Vehicles Properly Parked
34 CARS PARKED
TWO LANES OF MOVING TRAFFIC

**The chart (left) shows how angle parking leaves only two lanes of moving traffic on a 50-foot roadway; and how one of these is blocked when a vehicle is approaching or leaving a curb. Parallel parking at its worst is shown to obstruct the street no more than angle parking at its best: angle parking accommodates more vehicles, but does so at the expense of moving traffic.**

**The specifications for a raised safety zone at a street car stop (shown below) are in accordance with recommendations of the American Engineering Council.**


Sidewalk
Building line
Stopping, standing and parking of vehicles prohibited
Parked Automobile
Curb
Cross Walk
Not less than 1 traffic lane or 9 ft. 6 in.
Safety zone raised 5 to 7 in.
and/or
A minimum protection of 5-in posts 8 ft apart
Safety zone long enough to load usual number of cars at once
Not less than 20 ft.
Clearance at least 4 in.
Width at least 4 ft.
SAFETY ZONE
End of safety zone protected by obstruction at least 3½ feet high
Standard "Safety Zone" sign in yellow and black
Flashing yellow signal
Street Cars

# Boulder City—the Proposed Model Town Near the Hoover Dam

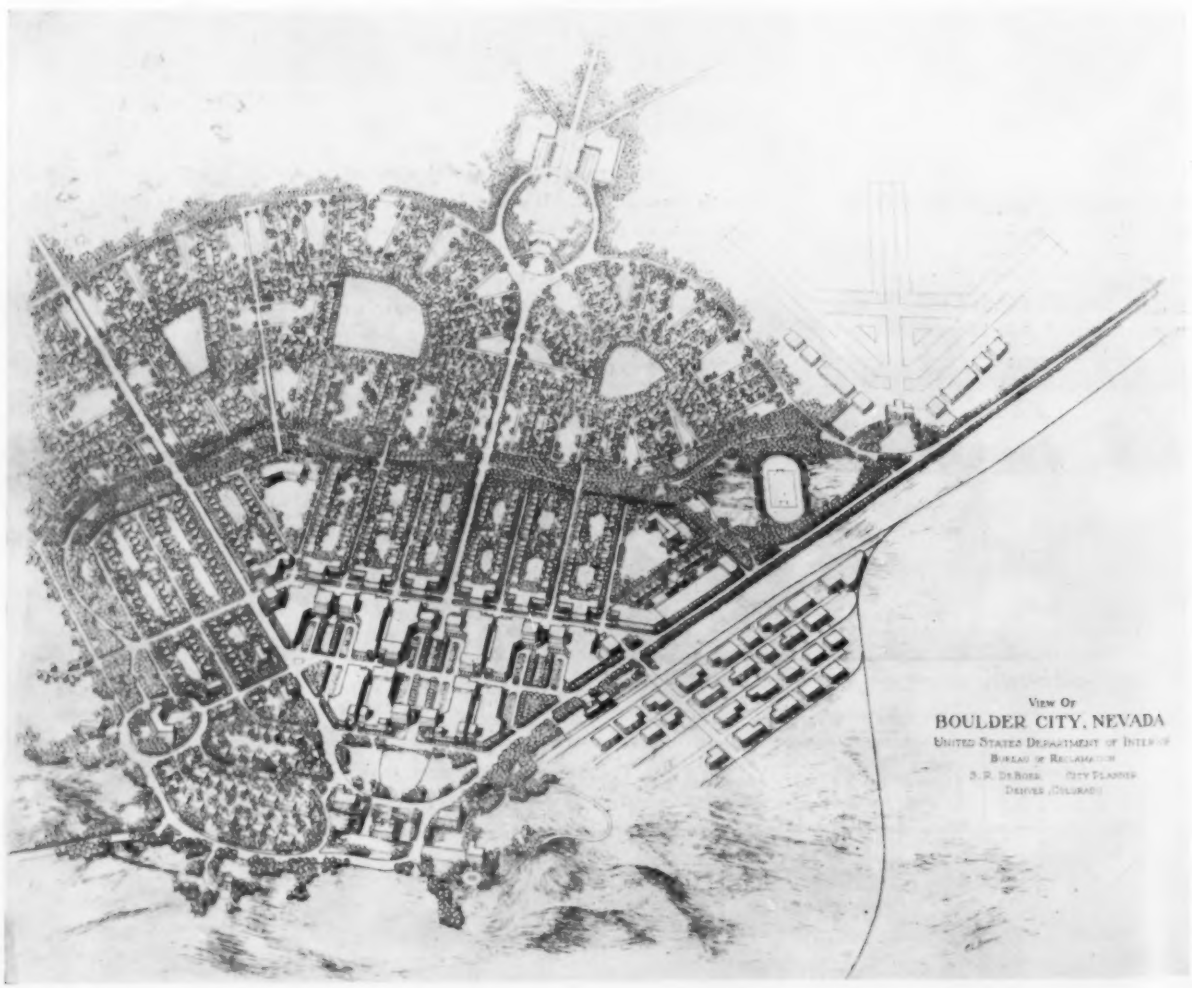
*By* **S. R. DE BOER**
**Landscape Architect and City Planner**

TO build the great dam known as the Hoover Dam across the Black Canyon of the Colorado River and store behind it some thirty million acre-feet of water, many preliminary operations are necessary. Among these are the building of a railroad to the top of the proposed dam, a highway to the same point and the housing of the men employed on construction during the seven or more years that the work will last, as well as the housing of the permanent employees afterwards.

The site of the dam and of the lake is in the arid region known as the Nevada desert about thirty miles east of Las Vegas, Nev. The area is devoid of all vegetation except the usual desert growth of mesquite and creosote bush, and until survey operations began, was wholly uninhabited.

Perhaps nothing expresses so well the interest our Federal Government is taking in city planning as the fact that both Secretary of Interior Dr. Ray Lyman Wilbur and Reclamation Commissioner Dr. Elwood Mead concluded that the town in which the employees must live for so many years during and after construction should be not only livable, but attractive as well, and laid out according to modern city planning principles. Boulder City is not expected to become a big city but, small as it may be, it is expected to become an object lesson in the planning of cities.

The dual character of the proposed town made its design difficult. At the outset it was decided that the town plan must be such that it could house a maximum number of people during the construction period and could be reduced to a smaller town after the construction period is past, when only permanent employees are left. This was worked out by using two concentric circles for residential areas, of which the inner circle will comprise the permanent housing area if the population is not large enough after construction is completed to require the use of both areas.



### Location and Topography

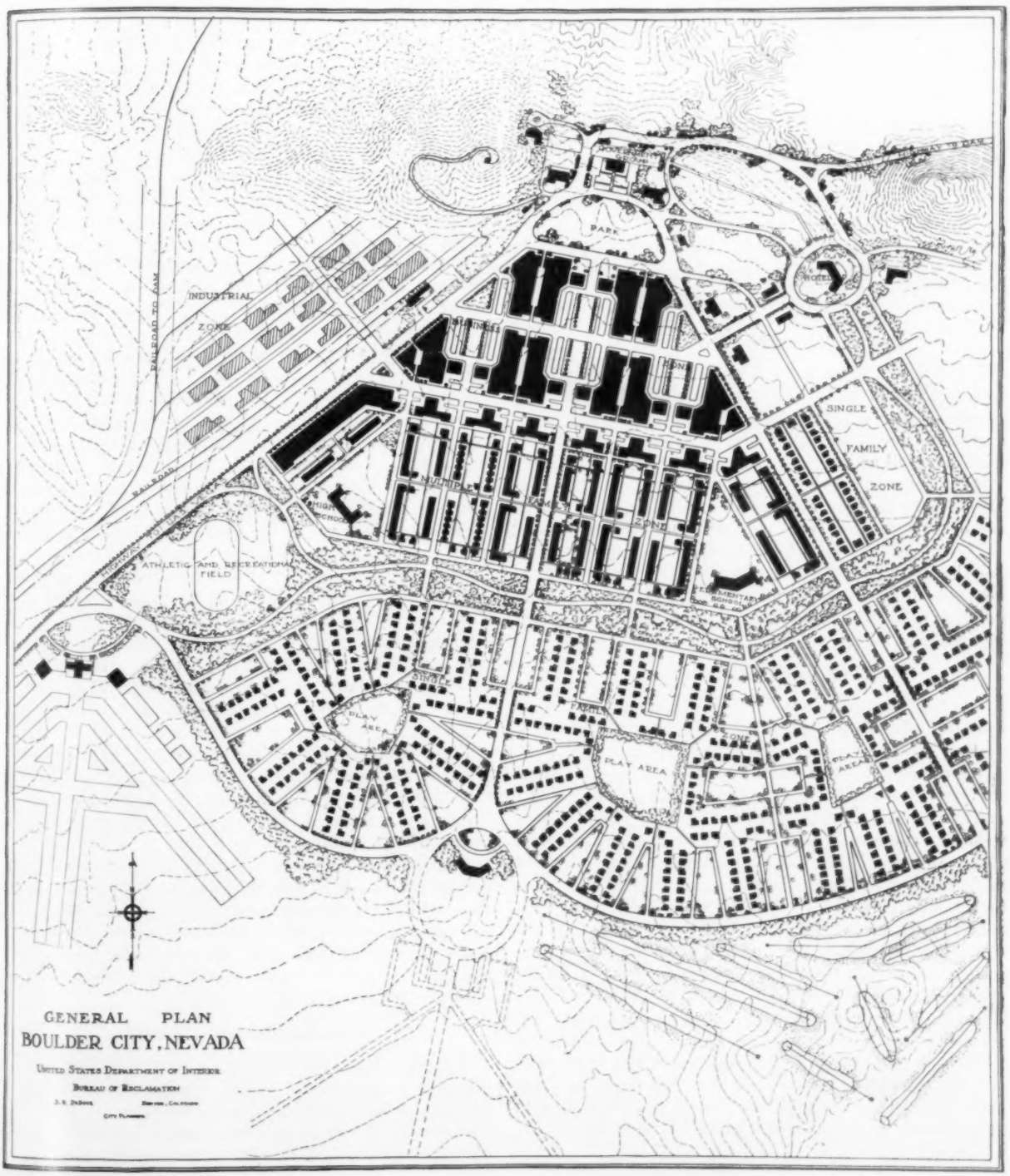
The location of the site was no easy matter by itself. The area belongs to the Nevada desert and is extremely hot in summer. The immediate neighborhood of the dam is mountainous, and no good site was found here. With no location within walking distance available, other sites were examined. The selected site is 1,200 feet higher than the top of the dam and some 10 degrees cooler in summer than other sites. It is the only place where the soil is workable.

On all other locations the soil consists of 60 per cent crushed rock mixed with fine sand. On the selected site it is pure sand. The site has a very attractive location overlooking the lake and mountains behind it and has good facilities for drainage.

The topography of this site consists of a saddle between small hills with a large area of an even and gentle slope extending fanlike to the south. The saddle is 1,200 feet above the proposed lake and overlooks it. The plan of the city is built on this topography.

### Principles of Design

It was decided at the outset that the following funda-



mental ideas in city planning should be embodied in this plan:

*A. Street Plan*

1. Direct connections of all residential areas with central business section.
2. Business streets and through traffic streets to be separated.
3. No parking of autos to be allowed on the streets, but provision made for off-street parking.
4. Alley loading and unloading spaces provided for.
5. All block corners cut off for greater visibility.
6. Carefully studied street widths.

*B. Zoning*

1. The usual division of the town area into residential business, and industrial zones.
2. Architectural control to supersede most of the provisions of zoning ordinances.

*C. Parks, Playgrounds, Schools, Public Buildings*

1. Space for play in every residential block.
2. A belt of forest trees to encircle the whole town and make a definite boundary for first unit of town.
3. A second belt of open space to consist of airport and golf course to make an outer boundary of the town.
4. Systematic provision for all play facilities, football, baseball, tennis, etc.
5. Definite location of all public and semi-public buildings so as to make them an integral part of the city.
6. Grouping of all churches.
7. Location of large tourist hotel on sightly spot near the town.

## General Plan

Between two small hills there is a wide saddle overlooking the valley and lake site. On this saddle the Government buildings will be located. The Government group consists of three buildings. These buildings, together with the Town Hall and the Post Office, will form a civic center. The Government Office Building is the center of the city. Three major boulevards focus on it, making a main street arrangement more or less like that of Washington, D. C.

This group of official buildings is formal in character, but the open park between the two outer boulevards is meant as an informal foreground sloping to the city. The building group is located in such a way that all buildings face the lake vista.

## Business District

The business district is arranged in a series of open squares. These open plazas are partly for automobile parking and partly for architectural effect. The total provision for off-street automobile parking will accommodate 1,430 autos. This will be sufficient for a town considerably larger than Boulder City is expected ever to become. The central parts of the plazas are treated with grass and trees. This will give a touch of natural green to the mall and at the same time reserve additional space for auto parking if this should become necessary. The open squares lend themselves to unusual architectural design and with careful control in this direction they are expected to become very unusual and attractive.

Along the alleys of the business blocks the usual provision in zoning ordinances for loading and unloading space has been worked into the ground plan rather than having it provided for by law. All stores will be arcaded over the sidewalk to provide shelter from the severe sunlight. By making this provision for all buildings, there is no argument in regard to one store's being more visible than another.

An attempt will be made to group stores of similar character together. This is in accordance with the process of natural zoning now going on in nearly all cities. The next step in zoning development undoubtedly will include provision to aid this natural process. In Boulder City it will mean that all stores for wearing apparel will be located in one part of the central square, all stores for food in bulk in another part, all stores for furniture and hardware in another section. All printing establishments, small laundries, shoe repair, etc., will occupy a separate square. All automobile service houses, filling stations, garages, etc., will face the main arteries of traffic.

## Residential Zones

An apartment house section adjoins the business section. The various apartment buildings head long residential blocks meant for multiple-family dwellings. These blocks are 900 feet in length. It is expected to have garages built on to the houses with entrances from the main street, and the living rooms of the houses facing the middle of the block, which will be kept open. The center of the block is to be used for a playground. The long block is cut in the middle by a walkway which continues from one block to the next.

A belt of forest trees surrounds the first tier of residential blocks. This belt has a double purpose. It is meant as a definite boundary for the city in case it is necessary to reduce the city after the construction of the dam. The main purpose, however, is in the parkway feature it creates. It will have a park road leading through it, but otherwise will be a forest for recreation only.

Beyond the forest belt is a zone for single-family dwellings. A new type of design is worked out here. Instead of the usual system of blocks, tracts of fifty acres and more are taken as units. The only major streets for these tracts are the boundary streets. From these wide streets secondary driveways in the shape of a capital V, or in places a capital U, are taken off. The interior of the V's is to be kept open for grass and planting. The space itself, however, is part of the lot on which the house is built. The driveway has an easement over the lot.

With this treatment, every home is fronting on a major street and yet is far enough away from it to be safe from all commotion, dust and fumes, and danger of the traffic road. Private garage roads are taken off from the driveways.

Every group holds eighteen residences. The groups front on the surrounding streets on all four sides of the tract. This leaves an open space in the middle of the tract. This space is reserved for play use. Every group is connected with this play space by a walk.

Regardless of the fact that with this treatment more ground per family is available, a good-size playground is reserved and every home is placed in a more or less park-like setting. In spite of these advantages, the per-lot cost for this treatment is less than this cost in the usual block division. This is due to the elimination of many streets, with pavements, walks, alleys, etc.

## Schools, Churches, Hotels

A grade school is located on the forest belt, and a high school is proposed on a similar location also fronting on the forest. Near the high school is the main athletic field. The schools are away from the traffic lines and are as nearly central to their districts as is possible.

Special sites are reserved for churches. These sites are all to the east of the town where the main street leaves the city to connect with the Hoover Dam road. The thought has been worked out that church buildings should be placed so as to aid the beauty of the city and also that they should be in proximity to each other in order to stimulate the religious activity of the city.

A special site has been reserved east of the churches for a large hotel. This hotel is connected with the forest belt around the city and is on a high knoll around which the main street circles. The commercial hotels are in the business district fronting on the open park.

### Industrial Zone, Railroad Station

The industrial zone is at the west of the city. With the prevailing south winds, smoke and fumes from this district will be carried away from the city. The railroad enters the city along the main highway. The industrial zone is at one side with very easy switch connections.

The railroad station is at the western end of the main street. With this building at one end and a church at the other end, the main street is given closed vistas. The railroad station is within very easy reach of the business district. It is on one of the main traffic boulevards and becomes an integral part of the esthetic side of the city.

### Airport, Golf Course

Encircling the city on the south and beyond the one-family residential zone, ground is reserved for an airport and a golf course. The airport is on the main highway entering the city, adjoining the railroad line and on the border between the industrial area west of the railroad and the residential area east of it.

The golf course forms the other half of the open space encircling the city on the south. A golf house is placed at the extreme end of the central boulevard. Space is reserved for a second golf course near the tourist hotel.

The plans as briefly outlined above were approved by Raymond F. Walter, Chief Engineer of the Bureau of Reclamation, and engineers under his direction are now staking out street lines and water lines, and are rushing all preliminary work in order that the buildings may be completed and ready for use at the time construction work on the dam begins.

# Airport Zoning and Eminent Domain

## *Important Official Conclusions and Recommendations*

"THERE is a feeling that to require public or semi-public airports to pay for contiguous land or rights in the air space immediately above it, in order to obtain safe avenues of approach, is imposing an undue burden upon an infant industry of the utmost service to the community. Those holding this view point out that other forms of transportation have been given analogous facilities without payment and ask that similar laws be passed for the benefit of aeronautics.

"It is true that for giving the air traveler the right, without expense to him, to pass through the space immediately above the land contiguous to the airport, and, similarly, for the removal of obstacles in the approach to the port, or marking them, there are analogies in many branches of our law. The closest of these is the right to pass through navigable water over privately owned land beneath it.

"It is realized that an analogy is merely an argument for the existence of a right, but not in itself a sufficient proof of it. The law and public opinion with regard to rights in land under navigable water have a long history behind them, during the course of which law and opinion with regard to land under what we have just discovered to be navigable air has developed quite differently.

"After a careful study of the problems involved, it is the conclusion of this committee that the protection of the interests of the public in its enjoyment of air transportation by insuring at all times (a) safe avenues of approach for aircraft landing on or taking off from established terminals and intermediate landing fields, and (b) the continued usefulness of such terminals and intermediate fields in meeting public needs, may be brought about to the best interests of all concerned through the application of suitable zoning ordinances and power of eminent domain. To this end the Committee recommends:

"(1) That, where not already covered and where political subdivisions other than municipalities are properly organized for the purpose, the provisions of state legislation be extended to include the adoption of zoning regulations by such political subdivisions as well as by municipalities.

"(2) That municipalities and other political subdivisions authorized to do so exercise the police power in the promulgation of properly coordinated zoning ordinances applying equitably to public airports and intermediate landing fields and to commercial airports of the public utility class, as well as other land uses.

"(3) That public airports and intermediate landing fields, together with commercial airports of the public utility class, be given the powers of eminent domain for the following purposes:

"(a) To condemn air rights over contiguous property in order to insure safe approaches to the landing area.

"(b) To condemn easements for the air marking of obstructions to air navigation jeopardizing the safety of the public in its use of the port.

"(c) To condemn contiguous property necessary for expansion of the port to meet public needs.

"(4) That, where not otherwise provided, appropriate steps be taken by public utilities commissions toward the protection of such airports and intermediate landing fields against the hazards of electrical supply and communication lines.

"On account of the different constitutional and statutory provisions to be found in the several states, it is impossible to present forms of statutes and ordinances directly applicable to the conditions existing in every state. The statutes and ordinances should be drawn in each case as to conform to the provisions of the state constitution and statutes."

These conclusions and recommendations comprise Section V of a report of a Committee on Airport Zoning and Eminent Domain, appointed by the Aeronautics Branch of the United States Department of Commerce. The full report appears in the Air Commerce Bulletin of January 2, 1931.

EDITORIAL NOTE.—The work of this special committee represents an effort of the Aeronautics Branch to assist in bringing about the protection of the interests of the public in its enjoyment of the rapidly growing mode of air transportation by insuring at all times (a) safe avenues of approach for aircraft landing on or taking off from established terminals and intermediate landing fields, and (b) the continued usefulness of such terminals and intermediate fields in meeting public needs.

Other section headings of the report are "The Airport," "Nature of Protection Needed," and "Protection That May Be Afforded by Law." There is also an Appendix which includes a suggested state airport enabling act and certain state statutes and municipal ordinances relating to airport zoning and eminent domain.

# Reconditioning Old Houses Pays Well in London

*By* B. S. TOWNROE

CLAUDE LEIGH, who has introduced into London novel methods of estate management of weekly rented houses, in December, 1930, extended his company's capital by over a million pounds, issued partly as Debentures, and partly as Preference Shares.

There is some misunderstanding regarding this work, and the following description, written after a number of visits to the estates managed by Mr. Leigh and his colleagues, may be of interest to those contemplating similar enterprises in the United States.

In the first place, the Leigh Housing Management System is not philanthropic. Nor are dividends limited, as in the case with some 250 voluntary housing societies in England which are registered as public utility societies. Mr. Leigh always state quite frankly that his objects are entirely commercial, and that he has proved that it is possible to improve housing conditions enormously and at the same time to make so substantial a profit as will attract the necessary capital.

His company is known as the Metropolitan Housing Corporation, Limited, and the address is 16, Hanover Square, W. 1. His directorate includes the present Senior Sheriff of the city of London, Maurice Jenks, who is expected to become Lord Mayor of London in November, 1931.

The properties owned by this company are very varied, ranging from small flats in block tenements, let at a few shillings a week, to good-class property let at high yearly rentals. An interim dividend of 3 per cent was paid last October, and it is expected that 8 per cent will be paid for the whole year. It is stated officially by the Directors that the profits during the first half of 1930 showed a substantial increase over the profits for the preceding year.

Recent visits paid to the properties revealed to me very clearly the reasons for the increased profits, and also for the very wide interest taken in the success of the experiment. One property bought recently is at New Cross, and consists of several rows of two-story houses. These were built in the latter part of the last century and are certainly models of incompetent design. There is one staircase, and the houses were planned for one family downstairs and another upstairs, but with no separation so as to ensure privacy. Furthermore, there was no water supply indoors on the first floor, and one sanitary convenience was used in common in the yard outside. The houses, however, are structurally sound, and the roads lying between them are well made and broad.

Mr. Leigh has entirely reformed a number of these houses, by giving each family a separate front door and installing an inside water supply, toilet, and deep sink. The inclusive rent charged for one of these flats, which comprises a living-room, three bedrooms and scullery, is one pound a week. As this is considerably less than has to be paid for similar or inferior accommodation in the neighborhood, the number of applicants is considerable.

Another innovation is likely to be widely imitated. Under the Rents Restriction Act, the company cannot increase any rents, beyond a certain limit, in the case of those houses which are still "controlled." Without obtaining a larger return, it is impossible to improve internal conditions and yet not to make a loss. This is one reason why many British property owners, who have not available the capital resources of Metropolitan Housing, or Mr. Leigh's skill and experience in management, are allowing their houses to deteriorate.

Mr. Leigh over a year ago established a model flat in the midst of his property. Here there are various improvements, like a deep sink, a cupboard for holding coal, an electric iron, a china cupboard, a draining-board and a host of other accessories to the home. The tenant inspects the model flat and decides which contrivance he would like to have installed. There is a small weekly payment of a dime or so for each, which does not count as rent. So popular has this system become that over 10,000 pounds worth of extra comforts have been sold in the last few months. These increase the contentment of the tenants, who thereby become more satisfied and regular in their payment of rent. Also, the value of the property is enhanced, and the weekly revenue increased.

By these and similar means, the whole standard of living of the tenants in the 60,000 or more dwellings managed by this company is enhanced.

It must, however, be clearly understood that this is neither a Government nor a municipal enterprise. Members of both the Conservative and the present Labor Administrations, have made personal visits in order to see for themselves what is being done. Local medical officers of health state that they find the condition of the flats and cottages to be on the whole very satisfactory.

It is expected that there will be further extensions of this work in the near future.

## *A County Organization to Promote Art Appreciation*

ENCOURAGEMENT in self-expression in art, music, and the drama, and the support of all civic enterprises of an esthetic character, are the chief objectives of the Cape May County (N. J.) Art League. The League is an outgrowth of activities initiated with the establishment of a community center at Woodbine, N. J., by Samuel S. Fleisher, well-known patron of art and founder of the Graphic Sketch Club of Philadelphia.

An art school was established in connection with this center, and was placed under the direction of a capable teacher. Through constant contact with the schools, and through frequent exhibitions and other art events, the sponsors kindled a genuine interest which spread throughout the county, with the result that at the end of the second year an art center was formed at the county-seat, Cape May Court House, under the auspices of Chamber of Commerce organizations.

A year ago the art center was merged into the Cape May County Art League, with a membership of several hundred. It circulates among the schools of the county exhibitions of the work of well-known artists, and of school arts and crafts work; it sponsors lectures and in many ways fosters art appreciation among the young. Thomas J. Durrell, County Superintendent of Schools, is President of the League, which is already arousing interest in counties in different parts of the country.

# FORWARD STEPS

**Reported by**

**Municipal Officials, Chamber of Commerce Executives, and Others**

## *Making Intersections of Streets Safer and More Beautiful*

WHITEFISH BAY, WIS.—Street intersections have been made into tiny parks in this village, thereby not only giving it a more beautiful appearance, but increasing the city's revenue, because the increase in land values through such beautification has also resulted in increased tax collections.

Instead of the traditional square corner at each intersection, a wide curve has been made, leaving a triangular piece of vacant lot at each of the four corners. Houses built on this curve have a maximum of frontage and a small back yard. But in a day when back-yard interest centers in a garage rather than a garden, this has proved an advantage rather than a disadvantage.

The title of the triangles rests with the city, for each bit of ground is the gift of the property owner. Property owners, too, are paying for the planting of dwarf shrubbery and for preparing the soil and grass. The village pays for the extra sidewalk which follows the curve in front of the house. It also pays for cutting the lawns and caring for the shrubbery. However, three years of trial have proved that this expense is more than taken care of by the higher taxes on property constantly increasing in value.

In the three years of trial, it has been proved that this type of street intersection not only makes for a more beautiful village, but cuts down traffic accidents. Whitefish Bay has not had a single accident on this type of street in the past three years. Motorists approaching a corner can see a motor car 268 feet away.

Through the plan now in operation in this village, all but two of the old-time street corners are eliminated in every city block. Because the streets had their width fixed by streets which had been established many years before and of which the newer streets were an extension, the curves could not be extended to eliminate these corners. The lots on the sides of the long blocks are similar to the lots in any ordinary city block. The alley in back of them begins and ends in a curve because of the rounded lot lines of the lots located on the new type of intersection.

The Whitefish Bay plan was worked out by H. A. Schmitt, Village Manager of Shorewood, a Milwaukee suburb, and Thomas Buckley, Commissioner of Public Works of Whitefish Bay, which is adjacent to Shorewood.

Realty firms have been glad to cooperate with the city planning program by gifts of triangular bits of land, says Mr. Buckley, who adds that the possibilities of a nice profit to the firms following such a gift undoubtedly make them willing givers. Lots with the smaller back yards and wider front yards and with the very desirable features of a view of the corner parkways have sold for as much as, or more than, the lots on the sides of the blocks which have the conventional back yard but do not have the parkway view. Greater distance from the neighbors has also been used as an effective argument for the wedge-shaped lots surrounding a parkway.

Figures worked out by Mr. Buckley and Mr. Schmitt show how the seller gains in frontage feet through this plan. In one typical block of the village, the seller would have 488 front feet available for sale if the land were to be platted in the usual way and offered for sale with square corner intersections. By making the corner round and converting a part of the lot into a parkway, the frontage through the curve would be increased to 526 feet, showing an actual gain of 38 saleable front feet on a single corner and 152 front feet at an intersection. If the land were to be valued at only $25 a front foot, the seller would gain $3,800 and the village would gain through the increased taxable valuation.

P. W. KOEPPEN.

## *Business Men Converted to By-Pass for Traffic Relief*

HUNTINGTON, LONG ISLAND.—Chamber of Commerce approval last month of a by-pass highway is an interesting aftermath to the publication in the September, 1930, issue of THE AMERICAN CITY of a half-page picture of Main Street, Huntington, as a horrible example of uncontrolled traffic. Subsequent to the appearance of that picture, the Planning Board of the town of Huntington called a public meeting to consider a by-pass for this street. Much of the congestion so apparent in the picture can be traced to through traffic, the street being a part of the Northern Boulevard, a state highway. The state is widening that boulevard to 40 feet and acquiring a right-of-way of 148 feet in anticipation of future needs.

At the public hearing autoists favored the by-pass, but the merchants and property owners of Main Street appeared with a petition bearing over one hundred sig-

THE WHITEFISH BAY PLAN

natures in opposition. There the matter stood, and the Chamber of Commerce, fearing delay to the plans of the state, took a hand in the matter.

A commmittee of the Chamber was appointed. This committee was made up of two merchants who opposed a by-pass, two citizens who favored a by-pass, and one neutral. Where the same problem had arisen in nearby communities, the committee visited them. In some instances the communities had been by-passed, in others they had not. The committee called on business men, seeking their opinions. Opinions were sought by correspondence with towns wherever the problem had arisen. The opinions of real estate managers of chain stores were also secured. When the committee had completed its study, a vote was taken and the committee voted four to one in favor of a by-pass. The opponent happened to be the original neutral, and he opposed the plan because of the additional cost of right-of-way.

A membership meeting of the Chamber was held at which the state and county highway engineers and the Chamber's committee presented all facts dealing with the subject. Subsequently the Chamber took a mail referendum vote of its members, accompanied by affirmative and negative arguments. The results was 135 to 30 in favor of a by-pass. The significant fact is that many of the merchants and property owners on Main Street who signed the original petition against the by-pass, voted in favor of it in the referendum.

P. J. PERINCHIEF,
Secretary, Huntington Chamber of Commerce.

## *Los Angeles Swims in Drinking Water*

LOS ANGELES.—An analysis of water tests taken by the City Health Department of the municipal pools operated by the Los Angeles Playground Department showed the following exceptional high standards of purity existing in the pools of the Department.

Of the 107 tests taken, but five were unsatisfactory. Forty-one of the tests were sterile, while 61 of the tests showed an average bacteria count of 196.73. The State Board standard for swimming pool water is 1,000 bacteria; for drinking water it is 300 bacteria. All tests showed sterile bacteria coli counts. The average bacteria present in all tests taken was 110. This is more than eight times better than the state standard for swimming pool water and almost three times better than the standard allowed for water used for drinking purposes. The figures were tabulated by the undersigned for the Los Angeles Playground and Recreation Department. They cover the season from January, 1930, till November 24, 1930.

All pools operated by the Playground and Recreation Department are equipped with the most modern pressure filters and chlorinators.

The eleven present pools represent an investment, exclusive of the cost of the sites, of $405,849. One additional pool is under construction, to cost approximately $35,000.

C. P. L. NICHOLLS,
Supervisor of Aquatics, Playground and Recreation Department.

A PART OF THE PORTLAND ORGANIZATION, WITH ACTING MAYOR BIGELOW (TEMPORARILY INJURED) IN THE FOREGROUND

## *A Course in Fire Prevention for School Children*

PORTLAND, ORE.—Some valuable lessons may be learned from a successful experiment that has been tried in this city, which for several years has been making a record for itself in its yearly reduction of fire losses, as compared with the preceding year, and is noted throughout the country as being among the cities of 100,000 or more maintaining an excellent standard in this respect. According to the city's Fire Marshal, E. W. Grenfell, high praise is due the fire-prevention work in the city schools and the close cooperation of school officials with the Fire Bureau.

It is significant that the reduction in Portland's fire losses coincides with the inauguration, in 1924, of the plan of having junior fire marshals appointed in every school in the city. The idea was conceived and followed out by the city officials, with the aid of the school authorities. Part of the program of Fire Prevention Week includes the furnishing of these children with inspection blanks and the request that they inspect their own homes and neighborhoods and make reports.

At the end of that first year, the Fire Marshal estimated that fires had been reduced 14 per cent by the work of these marshals and the schools they represented. He stated that through no other channel could the subject have been so thoroughly placed before the people of Portland as by the school children, who carry into their homes enthusiasm for fire prevention.

Portland was the first city in the United States to undertake the work of having high school oratorical contests on fire prevention, but the plan has spread so far that this year winners from different cities were guests of many municipalities throughout the country, and the champion orator of Portland on fire prevention was given a trip to Philadelphia. The second grand prize was $50, and the third, $25. In addition, winners in the high schools received $15 as first prize, $10 as second, and $5 as third. Next year the International Association of Fire Chiefs will conduct contests throughout the United States, and the champions will be determined at the convention.

The plan is for each high school to select its winner, and the final city contest among the representatives from the schools takes place at the public auditorium at the end of Fire Prevention Week. The talks must be at least five minutes and not more than ten.

There is the keenest competition between schools and between different classes of each school in fire drills, essay writing and reduction in the number of fires in the homes and neighborhoods of the pupils.

Every child in the Portland schools is familiar with the 24 "Don'ts" issued by the City Commissioner of Public Affairs in charge of the Fire Bureau, and they are worthy of attention from every adult in every city in the United States. Here are some of them:

Don't allow children to play with matches.

Don't block the fire-escapes; you may need them yourself tonight.

Don't leave everything to the landlord; inspect your own house from cellar to garret and locate all exits.

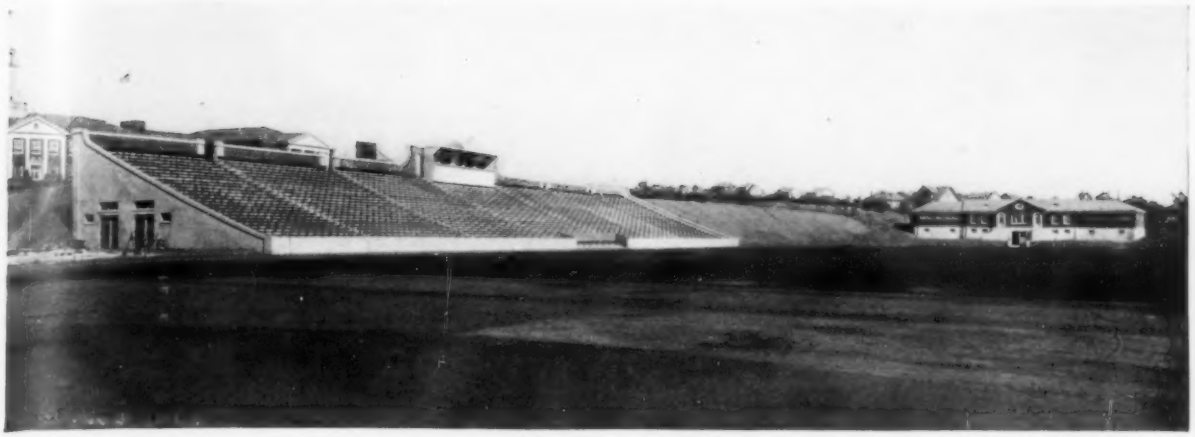
Don't throw away lighted matches, cigars or cigarettes.

Don't go into dark closets, bedrooms or cellars, using matches or candles to light your way.

Don't use insecticides in the vicinity of open flame lights. Many such compounds contain volatile inflammable oils.

Don't use kerosene, benzine or naphtha in lighting fires, or to quicken a slow fire—it may result in death.

Don't use gasoline or benzine to clean clothing inside of a building.



Don't have storage closets under stairways or near dumb-waiter shafts. Fire in these places cuts off your main exit.

Don't store oils, paints, grease or fats in the house. Keep them outside if possible. If you must have such things on hand, use a metal box or bin with a lid.

Don't put in the ash-barrel such articles as greasy paper bags, oily rags or waste which has been used to wipe machinery. Such articles cause many fires. Burn these things up immediately after use.

Don't neglect to have the chimney flue cleaned once a year. You are responsible, not your landlord.

Don't have lace curtains in vicinity of gas jets.

Don't leave holes in the flooring, walls or ceiling.

Portland School children are taught to "think fire before it happens." To this city it has meant, in the past few years, smaller waste in money and time from burned buildings. It has meant a small loss of life in fires. It will mean, in the long run, low insurance rates. And more important of all it means *a safe city.*

MARGUERITE NORRIS DAVIS.

## *New Stadium and Field House at Phillipsburg, N. J.*

PHILLIPSBURG, N. J.—A new stadium, field house and playing field were completed here in October for the Phillipsburg High School. Two thoughts which immediately come to mind on seeing the development are, first, that here is an athletic plant complete in every detail, with the best of facilities both for players and for spectators and, second, that the entire group—high school, stadium and field house—form a harmonious architectural unit.

The high school, built about two years ago, is of the Colonial type and executed in admirable style. Great care was exercised by Gavin Hadden, civil engineer, of New York, designer of the stadium and field house, to make these structures conform to the excellent architecture of the school building. In promoting this harmonious effect the rear parapet wall of the stadium was constructed of brick, and the field house almost entirely of brick. The manner in which the field house, a low, one-story building, was prevented from dominating the field is well illustrated in the accompanying photographs. The placing of the stadium on the center line of the school building and the locating of the entire athletic plant in an oval formed by city streets, directly in front of the school, serve to enhance the attractiveness of the group.

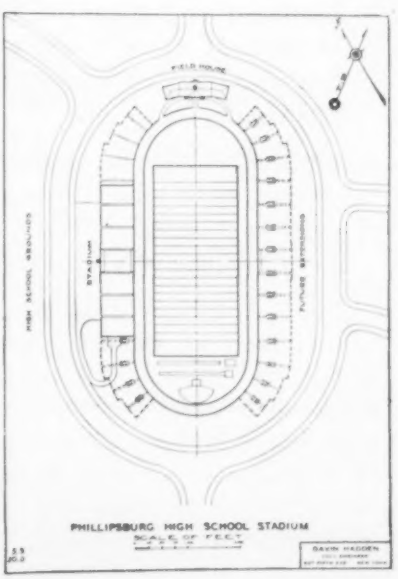
A MODEL LAYOUT

The Phillipsburg, N. J., stadium and athletic field shown above are designed for maximum usefulness as is indicated in the plan reproduced below

The new playing field, a portion of which had been in use previously for athletic purposes, includes a quarter-mile cinder track, within which are the football field and the jumping and pole-vault pits with their runways. The grading work for the whole project was done under a separate contract by G. Edward Myers, of Jamesburg, N. J.

The concrete stadium, seating 5,300 spectators, was designed as the first unit of an ultimate development of 20,000 seats with stands on both sides of the field, provision being made for such extension whenever desired. The stadium was so designed as to utilize to the fullest advantage an earth and rock bank on the school side of the field, a major part of the seat deck resting directly on the cutbank and thus realizing a very considerable reduction in the cost of the structure. Where the ground drops down at one end, the space under the stadium is utilized for comfort rooms. A feature of special interest is the covered press stand shown in the accompanying illustrations. Such a stand is an infrequent adjunct of smaller stadia, though one which is of considerable value. The general contractor for the stadium work was M. A. Carty, of this city.

The field house is one in which the high school and the town of Phillipsburg may take considerable pride, containing as it does a sunny administrative office looking directly on the field, separate suites of rooms for both the home and visiting teams and a storage space for accessories, all on the main floor. Each team suite consists of a locker room, shower room and a separate toweling room, with facilities for 50 men. Additional storage space is available in the attic. Supplementing these facilities for players and administrators, we find in the basement ample storage space for large field equipment, with direct access, through wide doors, to the track and to



## *with the New Centaur Highway Mower*

### A Specialized Power Tool for Weed Cutting on Streets and Highways

Ending all makeshifts, the Centaur Highway Mower is the first real power machine especially designed and built for weed cutting along streets and highways. It will go and cut almost anywhere, with cutter bar at any angle from 30 degrees up, to 30 degrees down slope. It cuts close to fences, right up to poles or other obstructions.

85% of the normal amount of handwork is eliminated. It runs 10 hours on 6 gallons of gasoline. In Ohio, in 1930, these mowers showed an operating cost of 37 cents per mower mile.

The 12-inch high lift permits cutting at all times with the shoe off the pavement, ending the troublesome problem of shoe wear. It will run on pavement and cut over curbs, clearing up parkways between curb and sidewalk.

Through the foot control lever, the operator can raise the cutter bar to clear minor obstructions. Without leaving his seat, he can raise it clear to the vertical, and as quickly drop it down. If obstructions are hit, no harm is done, and the moment the operator throws out his clutch the automatic clutch brake stops the forward motion.

Cutting speeds range up to 3½ miles per hour. One mower will easily handle 500 mower miles per season, cutting it four times per year. One man can load it in a truck or it can be safely towed at a rate of 15 to 20 miles per hour—completely mounted on rubber wheels, it occupies only 4 feet, 7 inches of road space.

Complete information on request.

**FREE TRIAL OFFER**—The Centaur Highway Mower will be shipped on request of accredited highway officials on 5 days' free trial. Demonstrations can also be arranged for interested groups.

**CENTAUR**
**TRACTOR CORPORATION**
**41 Main Street Greenwich, Ohio**

the field itself. H. J. Banahan, of Phillipsburg, was the general contractor for the field house.

The financing of the project was carried out in a most satisfactory manner under a cooperative agreement whereby the town of Phillipsburg provided the bulk of the funds by appropriation and the remainder was furnished by the High School Athletic Association. It is of more than passing interest to note that in the entire construction of the stadium and the field house not a cent of money was paid for extras on the original lump-sum contracts, a notable achievement for work of this kind. The construction cost of the stadium was $39,000, and of the field house, $30,800; the cost of the grading and the athletic field, which were carried out on a unit price basis, amounted to about $36,000.

The development is one which has long been looked forward to in Phillipsburg and towards which M. E. Maloney, coach of the high school, gave most generously of his time and effort. It is due largely to his efforts that the high school now has an athletic plant which, for completeness of facilities and excellence of design and construction, is surpassed by few in towns of like size.

WILLIAM H. FISHER,
Mayor and Commissioner of Public Affairs.

## *Efficient Training to Be Provided for Municipal Officials*

ALBANY, N. Y.—The New York State Conference of Mayors has received a grant of $52,500 from the Spelman Fund of New York City, to be used in promoting the training of municipal officials and in the study of state-wide practical problems of municipal administration. This gift is to be applied over a period of six years for the establishing of training schools for municipal officials and in demonstrating the value of technical instruction and guidance of officials already in office. A special bureau has been established in connection with the Conference of Mayors under the direction of Albert H. Hall, formerly Director of the Schenectady Municipal Research Bureau. Training schools for all groups of municipal officials will be gradually established. These schools will be in the nature of institutes and round table discussions of the practical problems facing city officials. Studies of special problems in governmental administration will be made and published and the results of these investigations will be made available to all municipal officials.

EDWARD D. GREENMAN.

## *Improved Tax Collections Overcome Deficit*

HINTON, W. VA.—Wiping out the no-fund indebtedness of the General Fund is always a November objective. As there is no tax income from June to November, a deficit always accrues and must be paid off by collections during the discount period. It was feared that this would not be accomplished this year, since the newspapers were featuring reports that, elsewhere, tax collections were running about a third less than last year. Such was not the case with Hinton, as the percentage of total taxes collected during the discount period of November, 1930, was 46 per cent, while in the corresponding period in 1929 it was 44 per cent, in 1928, 42 per cent, and in 1927, 40 per cent.

The total collection, in dollars, decreased greatly this November, of course, on account of the reduction in the levy rate from 92 cents to 80 cents, and the total was also materially affected by the large number of taxpayers who availed themselves of the two-instalment plan, which was offered this year for the first time. The fact that the percentage increased again, when a decrease was expected, would seem to indicate that the tax cut was popular and that our tax-collecting system is being continually improved upon.

HUME K. NOWLAN,
City Manager.

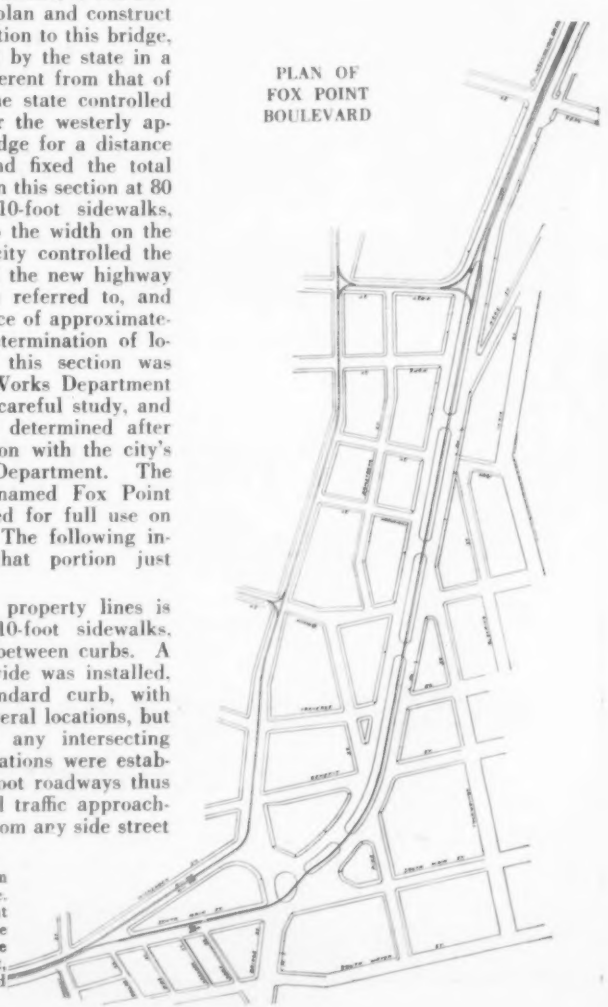
## *New Boulevard Solves Difficult Traffic Problems*

PROVIDENCE, R. I.—In connection with the new Washington Bridge over the Seekonk River at Providence, it was necessary for the city to plan and construct a highway as a connection to this bridge, which was constructed by the state in a location somewhat different from that of the old structure. The state controlled the taking of land for the westerly approach to the new bridge for a distance of about 580 feet, and fixed the total width of the highway in this section at 80 feet, including two 10-foot sidewalks, which corresponded to the width on the bridge proper. The city controlled the location and layout of the new highway between the approach referred to, and Bridge Street, a distance of approximately 2,200 feet. The determination of location and width of this section was made by the Public Works Department of the city after very careful study, and the traffic layout was determined after the fullest consideration with the city's Traffic Engineering Department. The new highway (later named Fox Point Boulevard) was opened for full use on September 25, 1930. The following information concerns that portion just referred to.*

The width between property lines is 120 feet, with two 10-foot sidewalks, thus leaving 100 feet between curbs. A central zone 40 feet wide was installed, surrounded by a standard curb, with openings therein at several locations, but at no point opposite any intersecting street. One-way regulations were established on the two 30-foot roadways thus produced, requiring all traffic approaching the new highway from any side street to turn right and weave with the main travel. There is two-way street-car traffic on the bridge and the approach, but on the main portion of the new boulevard trolley traffic is in an easterly direction only, the west-bound movement being diverted at East Street to an existing route. At this point of diversion a traffic signal is installed, actuated by the approach of any trolley movement which would interfere with west-bound vehicular traffic, and so arranged as to hold west-bound vehicular traffic for only such period as to allow the trolley movement to clear.

The section traversed by the new highway was of rather old, low-grade residential development for the most part, and for the greater part of its length the approaches from the south are on a considerable grade. Further, there is little development to the south between the new highway and the harbor, except certain docks, the traffic from which tends to take routes where the grade is low, and come in near or at the Bridge Street end. Thus the cross-traffic is, and probably will remain, rather light. A rotary traffic area has been installed at the Bridge Street end, and one-way restrictions have been applied to certain streets at their approach thereto.

PLAN OF FOX POINT BOULEVARD



* See airplane view on front cover of this issue. The author of this statement was Traffic Engineer of the city of Providence at the time when the traffic layout, as described, was determined upon.

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**LOUISVILLE, KENTUCKY**

*Branch Plant Offices*

Harrisburgh, Pa. Richmond, Va.

After a number of months of operation under conditions of heavy traffic, it appears that there is no reason to believe that the principles which have been applied in this layout are not correct.

RALPH W. EATON.

### *Reforestation Program Helps Employment Situation*

LITTLE FALLS, N. Y.—This city owns a splendid water system. It was one of the first gravity systems to be constructed in the state, built about 1885, and is now furnishing our city with an abundance of pure spring water from the Adirondack Mountains.

Soon after the development of the system, the city began to purchase land, with the view of ultimately controlling the watershed of the various springs and creeks. The result is that today the water supply of the city is protected by municipal ownership of over 4,000 acres of land. Part of this was acquired as virgin forest, but since 1916 we have added, by reforestation, 1,500,000 trees on an area of about 1,110 acres.

Some of these trees are now eighteen or twenty feet high and are beginning to shed their lower limbs; the grass and all other shrubbery around them is dying and it begins to look like a real evergreen forest. This year's planting reached the sum of 225,000 trees, which helped materially in giving work to the unemployed.

In the protection of the watershed, we have demonstrated what can be done with a municipal forest. In 1926, under the direction of a forester, 5,000,000 board feet of timber, including both soft and hard wood, was marked for cutting. This timber was so selected that its removal will not in any way impair the value of the area as a protection forest. Logging began in 1927 and continued during the winter of 1928 and 1929. The contract for its removal was let to a concern specializing in high grade lumber for sounding-boards for pianos, and brought to the city a revenue of about $30,000.

JOHN M. TANZER,
Mayor.

### *California Continues to Aid Veterans in Home and Farm Purchases*

SACRAMENTO, CALIF.—That the people of California are satisfied with the results of the state aid to war veterans in home and farm purchases is evident from the approval at the last November election of an additional $20,000,000 of bonds for this purpose, bringing the total amount thus far authorized up to $50,000,000.

The Farm and Home Purchase Act, under the provisions of which these funds are being used, is Chapter 519, Statutes of 1921, as amended by Chapter 405, Statutes of 1923, and Chapter 822, Statutes of 1927. Veterans desiring aid in the purchase of a farm or home are required to file a preliminary application that the Veterans' Welfare Board may determine their eligibility. A maximum of $7,500 may be expended by the Board in the purchase of a farm. Home purchases are limited to $5,000, although the applicant may acquire a property to the maximum value of $7,500 by personally financing the difference.

After a veteran has been authorized to make a selection of property, he may submit to the Board the farm or home of his choice anywhere in the state. If he chooses to have a dwelling constructed, he must assume all responsibility in connection with the transaction until the property is completed and ready for occupancy. He may then submit it for the consideration of the Board. Appraisements are made and if the selection is found to be suitable and the value sufficient, a search of title is authorized. The property is purchased for cash and the title vested in the state until the applicant shall have fulfilled the terms of a contract executed between himself and the Veterans' Welfare Board for repayment of the amount invested to his credit. All costs in connection with the transaction, including appraisals and a 5 per cent administrative charge, are added to his contract and included in the sale price to him.

The entire operation of the plan is therefore conducted without ultimate cost to the state. Before the purchase is completed, the applicant is required to deposit in the case of a farm 10 per cent of the selling price, this amount to be applied as the initial payment on the contract to be executed. On home purchases the amount required is only 5 per cent. The usual annual payment on a $7,500 farm purchase is $560.50. In the case of a home contract, the payments are made monthly and are ordinarily in the amount of $33.10. These payments include interest on the deferred principal at the rate of 5 per cent.

The Veterans' Welfare Board was created for the purpose of administering this Act, and was charged with the responsibility of insuring its success. Funds have been provided by an original bond issue of $10,000,000, a second issue of $20,000,000, and the recent issue of an additional $20,000,00.

GEORGE M. STOUT,
Secretary.

## Airport Surfacing from the Standpoint of the Aviator

AT the Ninth Annual Asphalt Paving Conference, held in Memphis, Tenn., early in December, Captain Frank Hawks, Superintendent of Aviation for The Texas Co., and holder of a number of long-distance speed records for airplanes, speaking as an aviator, discussed the problem of airport surfacing in regard to the arriving or departing airplane and danger to the plane while in port.

The danger referred to is that from dust which is raised on the field, particularly from planes warming-up their motors, this dust being blown about where other planes may be, even into the hangars, and getting not merely upon outer surfaces but also into carburetors, manifolds and motors. The problem related not so much to warming-platforms and runways, for which the dust problem can be taken care of in connection with their general construction, but to preventing dust on the field as a whole. In this connection Captain Hawks said:

"The only real satisfactory dustlayer will be one that not only coats the dust and makes it bind together but sticks it together to the ground so tight that it is not disturbed by the back-wash from the propellors of the larger motors. If the dust is only coated lightly and can be moved by the propellor blast, its effect on the planes is worse than the uncoated dust. It sticks and is difficult to remove either from the exterior or from the interior surface. Therefore, I believe that dustlaying for the major part of the field is necessary and the amount of asphalt material used should be sufficient to give a semi-permanent effect. I appreciate that this would involve considerable expense initially, but in the long run it will probably be no more expensive."

For the plane arriving or taking off, the runway surface becomes of prime importance. Captain Hawks stated that the most generally satisfactory surface is a well-knit deep-rooted turf, but that climatic conditions, intensity of airplane traffic, etc., may make this impossible to create and maintain. In these cases the runways "should as far as possible have a surface as much like turf as it is possible to contrive mechanically. Lack of funds may prevent building up to the desired extent the first year, but in such cases the character of the surface should be such that it can be easily strengthened or extended at a minimum cost. In my experience, hard, abrasive surfaces are not as satisfactory or as comfortable as the more elastic, resilient types. When taking-off, resilience without undue retarding of the wheels of the running gear is desirable, with sufficient bite or grip for the tail-skids to permit steering. This is especially necessary when taking-off in a cross-wind. On landing, the same resilience relieves somewhat the impact shock on the landing gear. The tail-skid or prop, of course, is one of the controls both in taking-off and landing. On a hard surface it is rapidly worn off. It should be, however, gripped more by the elasticity than by the roughness of the surface. What appear to me, untutored as I am in road lore, the most satisfactory types are those of which I understand asphalt is the cementing material and of which the asphalt type forms both the elastic support and the non-skid surface."

SINCE 1867

# COLDWELL POWER

*Above: Coldwell "Twin-Thirty" motor lawn mower and roller. Mows and rolls simultaneously 6 to 8 acres a day on one gallon of gasoline. Riding sulky may be had as extra equipment.*

## Power Lawn Mowers Built for Tough, Steady Jobs

THE new 1931 Coldwell Dependable power lawn mowers and rollers are designed to produce finer results and to give longer service with less expense for upkeep. Improved simple design and sturdy construction plus the new Coldwell powerful twin-cylinder motor is the answer.

Your desire for finer lawns at a new low cost warrants your investigating these new Coldwell models.

Available in a wide range of sizes—Dependable, low-cost service.

***Full details on request***

**COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.**

***In Canada—Taylor-Forbes Co., Ltd., Guelph***

***Manufacturers of DEPENDABLE Lawn Mowers—Hand, Horse, Gasoline, Electric***

# Nine Years of Suburban City Zoning

*By* PAUL A. BANKSON
City Plan Engineer, New Rochelle, N. Y.

ZONING first became effective in New Rochelle in 1921. The city, a suburb of New York, has a population according to the 1930 census of 54,055. Commuters to the metropolitan district make up about 16 per cent of the population; housewives represent about 24 per cent, local workers 27 per cent, and the remainder are children. Approximately 62 per cent of the 54,055 live in one- and two-family houses, 23 per cent in houses of three families or more, and 15 per cent in rooming houses, hotels, etc.

In 1921 the city was divided into the usual use, area and height districts. The area district was based upon the prevalent principle of the number of "families per acre," but was declared void in 1924 as not authorized by the General City Law. In 1925 the ordinance in which the area districts provided for yards and percentage of occupancy was revised. While the most restricted districts permitted but 25 per cent occupancy, builders found it profitable on account of the depth of some lots to construct apartment houses thereon, very frequently in the finest residential sections unless otherwise prohibited by deed restriction. Consequently, some eight or ten apartment buildings became permanently located among fine one-family residences.

In 1927 an amendment creating one-family districts was enacted. Pending the amendment there was a rush for apartment building permits, and numerous attempts to set aside the ordinance through court procedure were instituted. Fortunately, the city was victorious, a favorable decision setting aside all similar cases. An actual survey of housing conditions was afterward made and it was found that in most instances the percentage of occupancy in the designated apartment zones could be considerably reduced and apartment building still be profitable. Accordingly, a revised ordinance was passed by the Council in June, 1929.

### Lot Occupancy

The results of the door-to-door survey of a number of modern apartment houses disclosed the fact that those apartment buildings with a lot occupancy ranging from 19 to 36 per cent were the most fully occupied and received the highest rentals.

Until the new ordinance was passed, apartment buildings had been permitted to occupy 60 per cent on interior lots and 80 per cent on corner lots in a "C" district. In the "B" district, on an interior lot they could occupy 50 per cent, on a corner lot, 70 per cent up to a height of 23 feet above curb level; above such level, 30 per cent for an interior lot and 40 per cent for a corner lot. The 1929 ordinance corrected this situation by creating only one apartment zone district and by regulating the lot occupancy therein by front, side and rear yards, as well as courts, with no mention of percentage of lot occupancy. In practice it works out to a maximum of from 40 to 45 per cent occupancy. As the Building Code limited semi-fireproof structures to six-story heights, builders seemed to accept this as a stopping-point. Accordingly, the revised ordinance limits the height to six stories.

Of New Rochelle's 10½ square miles, 76.4 per cent is building area (all land exclusive of parks, streets and other open spaces). Four and nine-tenths per cent of the city is zoned business and 2.2 per cent industry. Of the 69.3 per cent zoned residential, one-family districts comprise 59.2 per cent, two-family districts, 2.7 per cent, and apartment districts, 7.4 per cent. The apartment area is 10.6 per cent of the total residential area.

### Amendments and Variances

During the period 1921-1930, 240 applications for change of zoning classification were presented to the Council. Of these, 77 (32 per cent) were granted, 73 (30 per cent) were denied, and 90 (38 per cent) were either withdrawn, held in committee or referred to the Zoning Board of Appeals. Thirty per cent of the changes requested were for apartment zoning. Of the requests granted, 48 per cent were for apartments, 4 per cent for two families, 39 per cent from residential to business, 7 per cent from business to industrial, and 2 per cent from residential to industrial. Most of the changes made in the map were small in area. Of the requests denied, 45 per cent were for apartments, 50 per cent from residential to business, 3 per cent from business to industrial, 2 per cent from residential to industrial.

During the same period, of the 419 applications made to the Zoning Board of Appeals, 365 were granted, 49 denied and 5 withdrawn. Of those granted, 190 were for minor variations due to narrow, shallow lots and exceptional topographical conditions. Public garages comprised 98 of such applications; apartment garages, 21; garages in clusters of three to five for rental purposes, 36; and automobile filling stations, 20. Of the applications denied, public garages comprised 9; apartment garages, 13; rental garages, 3; and automobile filling stations, 4. Of the 190 minor variations granted, most of them relieved the Council of changing zoning classifications.

As a result of the close cooperation of the Building Department and the Board of Appeals, many applicants were aided in adapting the use of their property to the requirements of the ordinance, thereby saving needless Council legislation. The Board of Appeals, members of which receive no salaries, meets once a month, with occasional special meetings.

# Automatic Sprinklers and Airplane Hangar Fires

To the Editor of THE AMERICAN CITY:

In the article, "Correct Fire Protection for Airports Requires Careful Study," in THE AMERICAN CITY of November, 1930, there are some references to automatic sprinklers in a part of the article on this subject that are not in accord with the facts developed by the comprehensive series of tests in the experimental airplane hangar at the Bureau of Standards, Washington, D. C., April 22 to May 2, 1930, to determine the ability of automatic sprinkler systems using water to control fires in airplane hangars under conditions approximating normal occupancy and of maximum fire hazard involving quantities of gasoline and quick-burning wing fabrics.

The tests were conducted under the direction of an impartial fact-finding committee, the Chairman of which is Colonel Harry H. Blee, Director of Aeronautic Development, Aeronautics Branch, U. S. Department of Commerce. There is nothing in the full report of the tests that would support the following statements in aforesaid article:

"Opinion is divided as to the effectiveness of water sprinkler systems" in airplane hangars.

"Water is practically useless as an extinguishing agent for fire in gasoline, etc.

"How effective such systems would be in combating a fire which involves highly flammable liquids and materials at its very outset, is impossible to state definitely at this time."

In the "Report of Fact-Finding Committee on Control of Airplane Hangar Fires by Automatic Application of Water," which is the full report of the tests, published by the Aeronautics Branch, U. S. Department of Commerce, there are records of tests determining beyond question that water sprinkler systems are effective in not only arresting fires involving highly flammable liquids and materials but actually extinguishing them, and that good old water is not "practically useless" in controlling fire when discharged by an automatic sprinkler system.

Those desiring copies of the report may address requests to the undersigned, at 80 Maiden Lane, New York.

IRA G. HOAGLAND,
Secretary-Treasurer, National Automatic Sprinkler Association.

# PITTSBURGH DES MOINES

## "we had ample water to put out the fire"

. . . writes Former Village President E. G. Gartinger of Lake Odessa, Mich., in his letter of July 17, 1930, describing "the most disastrous explosion and fire we ever had . . . the whole town looked doomed" which occurred July 16, 1930. "We had 75,000 gallons of water on hand in your tank—which saved our town."

In 1928 the town of Lake Odessa ordered a 75,000 gallon "Pittsburgh - Des Moines" Elevated Water Tank on a tower 91 feet 8 inches high to guarantee a strong gravity pressure—for domestic water supply and for just such serious emergencies as shown above. Lake Odessa secures its water from several small wells, and without the reserve storage supply given by the PDM Tank, their fire fighting apparatus soon would have run out of water in fighting the above conflagration.

**Our 48-page Water Works Catalog gives valuable information on the construction, operation and savings effected by elevated steel tanks and standpipes of adequate capacity.**

Is your town or manufacturing plant adequately protected with a good water supply?

The "Pittsburgh-Des Moines" organization has been erecting water tanks in all sections of the United States for over 34 years.

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**Chicago** **Atlanta** **Dallas** **San Francisco** **Seattle**

# Is There a Need for Airport Engineers?

BEFORE publishing the accompanying item, "The Vanishing Airport Engineer," by Archibald Black, of New York, THE AMERICAN CITY decided to consult other engineers who have been active in the municipal airport field, to find out whether their experience has been similar to that of Mr. Black, and to ask whether they favored the publication of the item. It was therefore submitted to all the airport engineers listed in the latest directory issued by the Aeronautics Branch of the Department of Commerce. Four of the twenty-three men who replied said that they or their firms had no direct interest in municipal airport design. Two of the remaining nineteen replies objected to the publication of the item, on the ground that it did not sufficiently explain the reasons for the decline of the airport engineer. The majority agreed with the statements in "The Vanishing Airport Engineer," and their views are indicated by the following typical extracts from the letters received, which also suggest additional reasons for the expert's decline.

### Cities Need Advice

"Cities try to do their own airport engineering work without the help of engineers trained along this particular and most exacting profession," writes Hugh L. Thompson, of the Hugh L. Thompson Co., Kansas City, Mo. "The average city believes that all that is necessary for an airport is a large, smooth tract of ground, perhaps with some sort of runways on it, and perhaps with a building or hangar of some sort. They do not realize the tremendous number of conditions that must be taken into account in locating and building a satisfactory airport. Neither do they consider the needs of the future, with the result that we are getting many airports over the country which at a future date may be discontinued in favor of other airports built up at a very great expense at this future time; or, if not a discontinuance of the airport, a series of changes that will be very expensive. This can be eliminated at the start by a competent airport engineer taking into consideration all of the present, as well as the future, conditions, so that the airport can constantly be improved without throwing away the work and money that is spent in the first place."

### Special Training Required

The lack of competent airport engineers has been largely responsible for the eclipse of the "so-called 'airport engineer,'" in the opinion of Wendell S. Merick, of Merick-Wildish & Co., Chicago. "In the beginning of aeronautical activity," he writes, "any pilot, particularly one with a war record, whether he had engineering training or not (and in most cases he had not), together with a whole host of others who thought they knew something about engineering in general, started themselves out as 'airport engineers.' The greater number of these started out without any background as an engineer in the old accepted practices, either as civil, mechanical, or what not. Naturally, many mistakes were made in the method of selling their services, as well as in the developments attempted. . . .

"Airport designing requires a trained staff of men who are alert and possessed of sound business and engineering judgment that will permit them to lay aside all other past practices and attack the problem of designing an airport as a new and distinct science. It is not possible to apply those standardized, empirical rules and formulas on which carloads of textbooks have been written, but each case must be solved independently. . . .

### Lack of Understanding on the Part of the Public

"The great need today is not only better so-called airport engineers, but a greater understanding on the part of the public, including city officials, city engineers and the executives of corporations, as well as those who have anything to do with airports. The public must understand that airport designing is not just child's play, that no matter how small their project may be, they must have the best talent and be willing to pay for it."

Benjamin King, of Benjamin King & Associates, Washington, D. C., also blames public ignorance for the restricted demand for the services of airport specialists. "If public confidence in this new profession has been impaired in some instances," he writes, "by the blundering of incompetent persons representing themselves as experts, the cause may still be said to originate with public ignorance, wherein public officials made unwise selections of men to handle their projects, theorizing that any reputable engineering or architectural firm, even though lacking aviation experience, should be able to do a creditable job of airport engineering. However, the desire to get by with little or no engineering expense is, I believe, responsible for the majority of cases in which special talent is eliminated. . . .

### Department of Commerce Aid

"It is probably true that a misconception of the scope of free aid given by the Department of Commerce is responsible for the popular notion that almost anybody can assume direction over airport development under the guidance of the Department. Nobody who has made a serious study of the Department activities can possibly justify such an absurd notion. I know that the Department urges the employment of qualified airport specialists, and that they do not regard their service as obviating the necessity for engaging special talent to direct the development. Their publications seek to standardize and regulate airport design, construction and equipment, and while these publications comprise the manual of the airport engineer, they cannot be regarded as, in themselves, providing a complete education in the profession."

### Aviation Experience Necessary

"Unless one has had experience in piloting airplanes, he certainly is not qualified to form an intelligent opinion on airport location and layout. One who has not had the worries of landings and

## The Vanishing Airport Engineer

**Owing almost entirely to causes other than the slump in aviation, the airport engineer is rapidly going the way of the buffalo and other more or less extinct species. Airport engineering began several years ago; interest grew steadily until, by 1928 and 1929, a substantial list of airport engineering firms was compiled by the Aeronautics Branch of the Department of Commerce. Although latest editions of this list still contain the names of 66 firms, the number actually operating in this field has dwindled until only some six or seven now maintain airport design staffs. Even most of these have little or no work on hand, while the others have either restricted their efforts to other lines or have folded their tents like the Arabs and silently stolen away.**

**This situation is rather a surprising one for an industry which recently underwent such great expansion, and its existence is not fully appreciated. While the causes are several, perhaps a misconception of the scope of the free aid given by the Department of Commerce may be put down as the primary cause. The desire of the average city engineer to get through somehow without expert advice represents another of the most evident causes. In practice this arrangement leaves much to be desired, for the Department of Commerce experts do not design airports nor do they even make complete reports on sites. At the same time, the city engineer's staff rarely includes men with such experience. Hence, to the writer, this elimination of the airport designer seems very ill-advised and likely to prove the source of many expensive blunders in the very near future. Lest his personal interest in the profession be accepted as having warped his judgment, it might be noted that one of the leading air-minded universities now includes a course in airport design, a fact which furnishes tangible evidence of the opinion of others on this need.**

**—ARCHIBALD BLACK.**

# 1971 Aspirations..1871 Limitations

THE time to widen and straighten roads is before property values mount—not after. Road improvement will be less costly if done early.

Roads which accommodate only two lanes of traffic—roads with blind, sharp curves—do not fit the present or the future. For 1871, they were good enough; by 1971, they will lead only to deserted villages.

A good working understanding of the several ways improvement may be effected with Tarvia "Re-Tread" will encourage action where taxpayers are inclined to delay on the score of expense.

For Tarvia "Re-Tread" will provide dustless, rutless, easy-riding, ample-width roads at a cost that simplifies any financing problem. And a Tarvia "Re-Tread" road laid today for today's traffic will still be there as a solid foundation for further development when traffic hits the many-thousand-vehicles-a-day mark in 1941 or later.

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**Tarvia "RE-TREAD"**

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take-offs can have no true conception of the action of air currents over various classes of terrain, as affecting the performance of aircraft near the ground. Thus, a pretty thorough knowledge of aircraft operation (including aviation meteorology), in addition to a background of experience in engineering and some experience in airport operation, are essential equipment in a person assuming direction over airport development."

### As Airports Become Established

John Nolen, city planner, of Cambridge, Mass., who states that his firm's part in airport design is the *location* of airports with due consideration to their city planning features, a service which "is becoming more and not less important," feels that the airport engineer should be distinguished from the airport manager. "The designing of airports," he adds, "was naturally taken up more generally at first, but has now settled down to a few specialists; in fact, to some extent it has been standardized."

"We look forward to the time when airports will come under strong management, perhaps of the chain variety," states James A. Emery, Vice-President of Ford, Bacon & Davis, Inc., New York. "This ought to make a renewed demand for engineering talent."

### Tendency to Consult Experts

"Aviation is here to stay in spite of certain lapses from the first hectic exertion of the industry following Lindbergh's transatlantic flight," writes R. S. MacElwee, of MacElwee & Crandall, Cambridge, Mass. "Airports must be built, and we believe that the airport is no different as a professional field of activity than ports for ships. . . . Many city engineers have an inclination to attempt to do all of the designing within city limits by themselves. On the other hand, from our experience primarily as port engineers, and secondarily as airport engineers, we have noted an increasing tendency of cities and private interests to call in as consulting engineers for the entire job, or for the major portion of it, in cooperation and collaboration with local city, county and state engineers, those specialists in the field who have gained some reputation as fairly well qualified and conversant with all the many stages of the work demonstrated by previous performances. . . .

### The Aviation Boom

"It would therefore seem to us that qualified consulting engineers with bona fide specialization in airport design will always have work to do, but that the rush of everybody into the field, as well as the rush of capital into aviation, so characteristic of two years ago, has passed the crest; in fact, descended entirely into the valley of the curve, and should now show an incline or upward trend, although the curve may be rather a flat one."

Gavin Hadden, of New York, also agrees that "the 'interest' in airport engineering from 1927 to 1929 was tremendously over-stimulated and that this professional activity was an inevitable victim of the boom in the aeronautical industry generally. This artificial stimulation," he writes, "naturally enticed large numbers of professional engineers (and also architects) to enter this field, and those who dropped all their other work to devote their time to this temporary boom are now suffering seriously from the reaction.

### Airport Economics

"There is probably much truth in the contention of the writer of the item that too much reliance is apt to be placed just now on the limited aid given by the Department of Commerce, and on the limited services of city engineers, but I do not see that this is anything about which to get unduly alarmed. As I see it, airport engineering is following along much the same lines that other brand-new activities of a similar nature have followed in the past. Until it is recognized that airports can show profitable *direct* returns and are attractive investments in themselves, apart from the large indirect benefits which they bring, it seems to me that the municipalities and others who are building them will tend to scratch along, in design and construction, to get off as cheaply as they can in their initial outlay, with all too little regard for real efficiency and economy. It seems to me that a sounder outlook in this respect is already evident. More and more owners are recognizing that the advantages in efficiency, economy, utility, safety, etc., of sound planning and sound design will repay them many times over for the fees of experienced engineers; if it were not for the recent temporary depression, I feel that the situation would be quite normal and is becoming increasingly sound."

The growing knowledge of the fact that "many proposed airports are economically unsound" has done more to cause the disappearance of the airport engineer than any other factor, writes Ernest P. Goodrich, of New York, who has acted as consultant with regard to airports. Mr. Goodrich reached his conclusions after researches in connection with a study of the economics of airports.

"Most communities are not yet educated in making the investment necessary for a first-class airport," finds Jack Beretta, of J. W. Beretta Engineers, Inc., San Antonio. He has faith, however, in the future of airport engineering.

Others who concur in general with the views expressed by the author of "The Vanishing Airport Engineer" are C. A. Nott, Superintendent, Nott Plant Co., Meriden, Conn.; L. Macomber, President, Macomber Engineering & Construction Co., Chicago; C. L. Ofenstein, Washington; B. Russell Shaw, of B. Russell Shaw Co., Inc., St. Louis, Mo.; Jerome Lederer, Chief Engineer, Aero Engineering and Advisory Service, Inc., New York; Kenneth Franzheim, New York; Campbell Scott, President, Technical Advisory Corporation, New York; J. C. Prosser, Manager, Aviation Department, The Austin Co., Cleveland; A. D. Arend, Airport Consultants, Inc., Philadelphia.

## Report of Assistant Secretary of Commerce for Aeronautics Stresses Importance of Having Competent Engineering Advice

**The service which the Aeronautics Branch of the Department of Commerce offers to municipalities through its Airport Section is described in the 1929-1930 Annual Report of the Assistant Secretary of Commerce for Aeronautics:**

**"*Field advisory service.*—The work of this section includes conferences with states, counties, municipalities, and civic and trade organizations desiring assistance in the selection of airport sites and requesting information regarding the requirements for the development of suitable airports. A small group of airport specialists are available for this service, which is rendered without charge upon request. These men are routed throughout the United States on carefully planned itineraries—the usual procedure calling for the inspection of a number of sites, perhaps a talk before a civic organization at noon or in the evening, and a conference or series of conferences with officials interested in the development of the airports and desiring information regarding the requirements of the airport rating regulations of the Department of Commerce. These specialists urge the importance of having experienced engineers make comprehensive studies and prepare plans for complete airport development, in order that every dollar invested in the project may be expended to the best advantage. It should be understood, of course, that the Department of Commerce representatives do not render this engineering service." During the fiscal year 1929-1930, 871 conferences with cities and municipalities were held by the airport specialists of the Aeronautics Branch.**

**The report states among its conclusions that "cities and towns are continuing to realize more and more that air transportation plays a very definite and important part in our national transportation scheme. These foresighted communities not only are establishing and encouraging the establishment of airports, but are taking steps to develop them to the fullest extent of existing knowledge and experience." The net increase in landing fields and airports of all kinds during 1930 was 298, reports the *United States Daily*, 97 of this number being municipal airports.**

**For additional figures, see page 106 of this issue.**

*Reproduction from a painting made at "Cantigny Farm," the estate of Colonel Robert R. McCormick, Wheaton, Illinois, by Frank Swift Chase* © The D. T. E. Co., Inc., 1931

# 75% of increasing Davey business comes from old clients

*Davey Tree Surgeons live and work in your vicinity*

In spite of the fact that the Davey Organization serves an increasing clientele every year, three-fourths of the Davey business comes from old clients, a majority of them over and over again.

There is no half good in tree surgery. Nothing is cheap that is not thoroughly good. Davey service is performed by men whom you can trust—it is truly economical because it is scientifically and mechanically right.

There is just one thing of importance to you and that is the kind of men who come to do the work on your priceless trees. It makes no difference how much someone else knows about trees; it is the men that come to your place who do the work. It is what they are, that counts.

JOHN DAVEY
1846-1923
*Father of Tree Surgery*
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Herein lies your protection, the guarantee of your satisfaction. All Davey Tree Surgeons are specially selected—no picked-up labor of any kind is used. All are thoroughly trained. Furthermore, a group of special chief experts travel from squad to squad to see that quality service is regularly delivered.

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621 City Bank Bldg., Kent, Ohio
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***There are no Davey Tree Surgeons except those in the employ of The Davey Tree Expert Company***

# DAVEY TREE SURGEONS

# NEWS AND IDEAS REPORTED IN BRIEF

## Detroit Establishes a New Office of Civic Pride

*By* H. F. REVES

MAINTAINING the appearance of the the city is the duty of Detroit's Civic Pride Officer, Jos. F. Dederich. The office is an entirely new one, created to solve a problem of civic appearance which must be met by every large community. This phase of municipal administration has hitherto been inadequately looked after by various departments—Health, Police, Recreation, and Public Works. The office newly established comes under the Department of Health, and is an idea of Dr. Henry F. Vaughan, Commissioner, who has outlined the specific duties of the Civic Pride Officer.

Eliminating waste paper from the public streets is the first job being tackled. Green containers have long been provided at required intervals for this purpose, but these have by no means been universally used. The common practice of dropping paper and other small objects is to be discouraged by a campaign of public education. Scattering loose paper by passing automobiles is a factor of particular importance which is to be met by particular propaganda. Chewing-gum on the streets is another object of attack. Consideration of the comfort of others is to be the keynote of this portion of the campaign.

The work will be undertaken in a small way, and will be increased as public opinion justifies. The first active campaign program is directed at the habit of spitting on the streets. Cards are being printed, to the extent of a quarter of a million, with a reminder of the unsanitary nature of the habit. These are being turned over to members of the Police Department and the health officers, who will hand one to any violator of the ordinance covering this subject. No attempt will be made to enforce existing legal restrictions through arrest and trial inasmuch as these restrictions have been ignored for a number of years.

Officer Dederich believes that a gradual spread of information along this line will convince the public of the merit of his program. Through twenty years' service as an investigator, he is well equipped to handle the job of building up the civic pride of a great city. He understands the necessity of getting public sympathy and support for any campaign for civic betterment; and for this reason is progressing slowly and carefully toward an ideal that a more enthusiastic man might never achieve by rushing forward too eagerly.

The actual jurisdiction of the office extends only to the public streets of Detroit. Private property and alleys are not included. It is felt, however, that owners of private property will follow the plans laid out by the city. When this stage is reached, the object of the Department will have been achieved. Other methods of general improvement will be sought and adopted. The Department is starting out with the object of finding and using every successful means of cooperating with the public to maintain a cleaner and healthier city.

## Model Ordinance Regulating Use of Sidewalks for Merchandise

BECAUSE ordinances regulating the use of sidewalks for merchandise in effect in American cities vary from absolute prohibition of the use of the sidewalks to the regulation of the use of certain streets or sections, the model ordinance on this subject, recently drawn up by a committee of the New York State Conference of Mayors and Other Municipal Officials with the aid of the State Bureau of Municipal Information, has been prepared so that it may be used to produce any degree of regulation desired. The committee which submitted the model ordinance consisted of J. Samuel Fowler, Corporation Counsel, Jamestown; Patrick J. Noonan, Corporation Counsel, New Rochelle; and Victor F. Boire, Corporation Counsel, Plattsburgh, N. Y. The text is as follows:

An Ordinance Regulating the Use of Sidewalks for Merchandise and Other Materials in the City (Village) of ————

The city of ————, in Common Council convened, ordains as follows:

Section 1. *Use of Sidewalks.*—It shall be unlawful for any person to store, pile, deposit, erect, keep or place, or cause, permit or suffer to be stored, piled, deposited, erected, kept or placed upon any sidewalk in the city ((village) of ———— any rubbish, wood, coal, boxes, barrels, stone, brick, lumber, dirt, merchandise,, shipping case, stand, stall, booth or showcase or other obstruction or any kind, except as herein or otherwise provided by law or ordinance.

Section 2. *Use of Sidewalks for Display of Merchandise.*—It shall be lawful for any person, during the time his store or building is open for business, to place or set out for exhibition any goods, wares or merchandise directly connected with the business transacted by him, on the sidewalk in front of a place of business, store or building owned, controlled or occupied by him for a distance of only —— feet (usually from 18 inches to 4 feet) of such store or building, and not to exceed a height of more than —— feet (usually 4 feet) from the level of the pavement. All foodstuffs when displayed as above provided shall be at least 2 feet above the level of the sidewalk and properly protected from flies, dust and dirt.

Section 3. *Receiving or Delivering Goods.*—It shall be lawful for any person to place or keep any goods, wares, merchandise, baggage or any articles of personal property which he may be receiving or delivering, and to unpack and remove the contents of any box, barrel or other receptacle, only on that part of any sidewalk next to the curb line not exceeding 4 feet in width and in front only of the store or building he owns, controls or occupies, but such goods, wares or merchandise shall not remain on such part of the sidewalk for a longer period than two hours or at night, on Sunday or any legal holiday.

Section 4. *Suspending Merchandise in Streets.*—It shall be unlawful for any person to hang out or suspend over any street any goods, wares or merchandise in front of his store, house or other building at a greater distance therefrom than —— feet (usually 18 inches to 4 feet) or at a greater height than 4 feet from the level of the sidewalk. All such articles so hung or suspended must be so fastened as not to swing over the street or sidewalk beyond the said —— feet.

Section 5. *Exposing Merchandise from Balcony.*—It shall be unlawful for any person to place or expose or cause, permit or suffer to be placed or exposed to show or for sale any goods, wares or merchandise upon or from any balcony.

Section 6. *Carcass Hanging Over Sidewalks.*—It shall be unlawful for any person to hang up or keep or to cause, permit or suffer to be hung up or kept, the carcass of any animal, except fish and poultry, or any part thereof, for exhibition or sale, or any purpose in, upon, or over any sidewalk.

Section 7. *Receiving Merchandise Through Openings in Streets.*—It shall be unlawful for any person to receive or deliver or to cause or permit to be received or delivered any goods, wares or merchandise through any trap or opening in or upon any street or sidewalk between the hours of ———— of any day.

Section 8. *Construction of Ordinance.*—(1) Nothing contained in this ordinance shall be construed to prevent the moving of goods, wares and merchandise across any sidewalk in the way of trade or for the use of families.

(2) Nothing herein contained shall be construed as giving authority to any owner or occupant of any premises to let, sublet, rent, lease or grant any of the sidewalk space for business stands of any kind or for any purpose whatsoever; and any person so found doing business may be summarily removed by the ———— and be deemed a violator of this ordinance.

(If it is desired to prohibit all use of the sidewalk except for the limited storage of goods to be delivered only the following section is necessary.)

Section 1. *Use of Sidewalk.*—It shall be unlawful for any person to leave or deposit or cause or permit to be left or deposited any goods, wares and merchandise upon any sidewalk, except such articles may be deposited inside and within 4 feet of the curb and not piled to a greater height than 4 feet, for not more than two hours while receiving the same in original packages or when in packages for delivery after actual sale thereof.

(If it is desired to prohibit all storage and exhibition on sidewalks, only the following section is necessary.)

Section 1. *Use of Sidewalks.*—It shall be unlawful for any person to erect or maintain or cause or permit to be erected or maintained on any sidewalk in the city (village) of ———— any bench, table, showcase or other structure for the display of goods, wares or merchandise, or to set or place or cause or permit to be set or placed any goods, wares or merchandise or other articles, by way of exposing the same for sale or otherwise upon or over any sidewalk or public place; procided, however, that

# "Speak up, so the court can hear you!"

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**Equip the courtroom with a Western Electric Public Address System which brings to everyone present every word of the witness, every inflection of his voice. This equipment picks up sound, amplifies it as needed and distributes it in clear natural tones to all parts of a room. For small cost, you get voice reproduction of the high calibre expected in equipment made by Bell Telephone makers.**

**Send the coupon for interesting details—of this and other uses in public buildings.**

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Graybar Building, New York, N. Y.
Gentlemen: Please send us the story of the Public Address System.

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**PUBLIC ADDRESS AND MUSIC REPRODUCTION SYSTEMS**

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this section shall not be construed to prohibit merchants and others from the free use of the sidewalks and public places in common with others in conveying merchandise and other property to and from their stores and places of business while engaged in receiving or delivering the same.

Section 9. *Definition.*—The word "person" when used in this ordinance, shall mean and include one or more persons of either sex, natural persons, corporations, partnerships, associations, joint stock companies, societies and all other entities of any kind capable of being sued.

Section 10. *Penalty.*—Any person who himself, or itself, or by his or its agent or employee, shall violate any of the provisions of this ordinance, shall, upon conviction thereof, be subject to a fine of not less than $—— or more than $—— or to imprisonment for not less than —— or more than ——, or to both such fine and imprisonment, and each day on which such violation continues shall constitute a separate offense.

Section 11. All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed.

Section 12. This ordinance shall take effect ——.

## School-Children's Anti-Litter Campaign

ALL previous records for the enrollment of block captains for anti-litter work in the high schools and junior high schools of New York City have been broken in the current school term, according to the New York Merchants' Association, which sponsors this work.

The Association's records show that 8,682 boys and girls have already volunteered to join in a campaign which will have as its object a cleaner city.

## The Shade Tree City of America

OSHKOSH, WIS., has splendid shade trees. So has Orlando, Fla. A friendly controversy between the Chambers of Commerce of the two cities as to which can lay claim to the title of The Shade Tree City of America, has been entered by a third claimant of the title for his city—Secretary Frank Heath, of the Chamber of Commerce, Marquette, Mich. Secretary Heath happens to be familiar with both Oshkosh and Orlando, neither of which seems to him to have the equal of the wide-spreading trees that shade the broad avenues of residential Marquette. In substantiation of his claim, he has undertaken a survey of his city's trees, in which work he will have the cooperation of the Marquette Boy Scouts.

Other cities have in the past laid claim to the country's finest shade trees, and may again be heard from. Still others in different parts of the United States, now well on the way to carrying out their comprehensive city tree-planting plans, might like to do so. Should the argument, begun by Secretary Smith of Oshkosh while vacationing in Secretary Gay's city of Orlando, grow into a nation-wide interchamber competition, its inspirational and educational values might prove tremendous, to say nothing of the establishment of the championship.

## Coupons Instead of Cash for Unfortunates

*By* GRACE K. PLANT

IN order to protect its members against being victimized by professional street beggars and at the same time to assist them in giving aid to the needy, the Minneapolis Civic & Commerce Association (analogous to the Chamber of Commerce in other cities) has mailed to each of the 3,500 men and women on its roster a book of coupons redeemable in food and lodging. Whenever accosted by one who asks for money or food, the member gives him instead a coupon and directs him to the Union City Mission, an agency supported by the Community Fund, which cares for homeless men. To the man who does not really need relief, the slip is valueless, but this method guards against any real distress being ignored.

Simple work tests are imposed in all but emergency cases. Those who appear ill and those who merely assert themselves to be ill are sent immediately to the General Hospital. The Mission also maintains a farm where those who are in earnest as to their willingness to work may live in comparative comfort, with certain small luxuries, such as tobacco, provided.

This coupon plan has evoked enthusiastic commendation from the public, most of whom know themselves to be incompetent to differentiate worthy from unworthy cases and yet hesitate to refuse appeals in these times of unemployment. In times past, when the books were less widely distributed, less than one per cent of the total number of coupons outstanding were presented at the Mission. Many of them of course were never given out by the recipients of the books.

*Don't Give Your Money for Moonshine, Dope or the Support of a Man Too Lazy to Work*

**Expert Beggars Require Expert Treatment**

Let the Union City Mission Sift the Needy and Deserving from the Professional Beggar, Tramp or Crook

AMPLE FACILITIES TO FEED AND HOUSE THE DESERVING CHEAPER AND BETTER

If we refuse to help a man there's a reason

UNION CITY MISSION

124 HENNEPIN AVENUE

*ORDER FOR LODGING OR MEALS*

C. M. SHAUGHNESSY, *Secretary of Relief Work*, UNION CITY MISSION

124 HENNEPIN AVENUE Upstairs Open Day and Night

*Please favor the bearer with food or lodgings at your discretion.*

*Name*_____

*Address*_____

THAT THE GENUINELY NEEDY MAY BE AIDED

The top illustration is a facsimile reproduction of the first page of one of the coupon books. Below it is one of the coupons from the book

## A System of Shore Parks Proposed for New Jersey

FEDERAL, state and municipal cooperation looking to a system of coastal parks extending along the Atlantic shore the length of New Jersey, from Sandy Hook to Cape May, has been proposed by J. Spencer Smith, President of the State Board of Commerce and Navigation of that state, and is receiving consideration in various official quarters and elsewhere.

It is only through government cooperation that the public can be assured of the continued privilege of using the beaches, Mr. Smith declared on a recent inspection trip down the coast with members of the Board and United States Army Engineers. He voiced the conviction that mile-long stretches of public waterfront playground should be acquired by the state at twenty-mile intervals, and that Federal and municipal aid were warranted in the acquisition in view of the fact that such public areas would, on the one hand, be largely enjoyed by people of other states while, on the other hand, substantial local benefits would ensue.

A bill proposed for introduction in the 1931 State Legislature would create state-owned coast parks. Other proposed legislation would authorize an appropriation of $1,500,000 for shore protection work.

Mr. Smith, also President of the American Shore and Beach Preservation Association, an organization of state, county, and municipal officials, visualizes the proposed New Jersey system of shore parks as but the beginning of a movement which will spread to all coastal states, and to states on the Great Lakes and the Gulf of Mexico.

## Metropolitan Trend Shown in New York State

THE 1930 Federal census returns for the cities of New York State indicate that the larger municipalities are growing more rapidly than the small cities that are outside of metropolitan regions. The total population of all cities in the state increased 23 per cent from 1920 to 1930, and 15 per cent from 1925 to 1930. Most of this increase was accredited to New York City, which gained 24 per cent from 1920 to 1930, and 19 per cent from 1925 to 1930. Buffalo, the second largest city in the state, increased 13 per cent from 1920 to 1930, and 6 per cent from 1925 to 1930. Rochester increased 10 per cent from 1920 to 1930, and 3 per cent from 1925 to 1930. Exclusive of New York, whose population represents about 75 per cent of the total of all cities in the state, the total aver-

# ONLY Ideal's BULLDOG GANG MOWER Has LOW WHEELS —So, Only the Bulldog can Do These Things:

Because only the Bulldog dared to be different from the old, high-wheeled type gang mower, the Bulldog can out-perform all others. Only Bulldog units with their short-frame can cut clean to the bottom of little hollows. Only the Bulldog can back up. Only the Bulldog can raise its cutting units, for traveling to another job. Only the Bulldog pushes its cutting units like a hand mower —so they cannot ride over tough, heavy grass—cannot bounce and sway when cutting on a hillside. Only the Bulldog has such a simple gear system—easily repaired right on the job. The Bulldog means a smoother, better cutting job through many years of steady work.

## NEW POWER MOWERS

The great new line of Ideal Power Mowers offers unsurpassed power and cutting speed. They mean smoother, cleaner, lower-cost cutting. Greater power means easier handling on corners and steep grades—faster work on the straightaway. Built with Timken Bearing crankshaft—automobile-type valve-tappet mechanism—fool-proof lubrication system. The powerful motor runs cool and sweet on even the hottest days. Two wheel-type sizes—20- and 25-inch. Two roller-type sizes—22- and 30-inch. Unequaled for speed, dependability, and low-cost cutting.

## TRIPLEX

For thickly foliaged ground, there is no mower that can keep up to the Triplex. This agile, tractor-driven machine cuts an area of 35 acres per day. It handles like a hand mower, and goes right up to the edge of bushes and walls. For transportation, rubber tires are attached, and the Triplex travels any distance under its own power.

*The Bulldog*

**IDEAL POWER LAWN MOWER CO.**
**400 Kalamazoo St., Lansing, Mich.**

*FACTORY BRANCHES*

413 W. Chicago Ave., Chicago, Ill.
237 Lafayette St., New York City
161 Vester St., Ferndale (Detroit) Mich.
273 Boylston St., Brookline, Mass.

*Canadian Distributor:* Aikenhead Hardware, Ltd., 17 Temperance St., Toronto, Ont.

***Dealers in all principal cities***

*The Triplex*

*Wheel Type—two sizes 20, 25-inch cut*

*Roller Type—two sizes 22, 30-inch cut*

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# GRASS CUTTING EQUIPMENT

During August we hope you will remember to mention THE AMERICAN CITY

age increase from 1920 to 1930 was 15 per cent, and 7 per cent from 1925 to 1930.

Not only have the large cities increased in general more rapidly than the smaller cities, but the influence of the large municipalities is shown in the large increases in population of those cities and villages located near a large city. This is particularly noticeable near New York, where four cities—Yonkers, Mount Vernon, New Rochelle and White Plains—show increases in population from 1920 to 1930 of 35 per cent, 45 per cent, 50 per cent and 70 per cent respectively. This indicates that cities near New York are increasing comparatively faster than New York itself. This of course is directly due to the influence of a large city upon its environs. The larger villages located near New York City show an even greater percentage of increase than the cities. The cities grouped around Buffalo show the next largest percentage of increase.

Four cities in the state, Little Falls, Mechanicville and Saratoga Springs, show a decrease in population during the period from 1920 to 1930, and 17 cities show a decrease during the period from 1925 to 1930. The only cities outside of the metropolitan areas of New York and Buffalo which showed large increases were Syracuse and Niagara Falls, where a considerable part of the increase was due to annexation of adjoining villages.

E. D. GREENMAN.

## A Recreation Activities Council

WE are working to establish in Cincinnati in connection with the present Public Recreation Commission, a Public Recreation Council:

*Objects:*

A. To foster, organize and promote non-commercialized competitive athletics or non-competitive activities upon or within playfields, buildings and recreation centers under the jurisdiction of the Public Recreation Commission, and on or in such other places as may be used by affiliated organizations.

B. To assist in establishing the aims and ideals of the Public Recreation Commission by meeting with that body at certain stated intervals.

C. To help create a public opinion that will result in the realization of these common aims and ideals.

D. To make clear to the public the rules, regulations, standards and administrative policy of this Commission.

E. To interpret to the Commission the wishes of the people.

This Public Recreational Council would consist of regularly elected delegates from Major Activities or Sports Advisory Councils, that should be gradually set up in connection with all sports and activities.

WILL R. REEVES,
President, Public Recreation Commission,
Cincinnati, Ohio.

## Cooperation of Federal, State and Municipal Government Urged for Highway Work

THE City Officials' Division of the American Road Builders' Association and the national Board of Directors of the Association passed the following resolution at the national convention in St. Louis on January 16:

"*Whereas* many state and Federal highway routes pass through the streets of our municipalities, thereby necessitating that the pavements in these streets be wider and stronger than would be nceessary for local needs, now, therefore, *be it resolved* that the Board of Directors of the American Road Builders' Association be and they are hereby requested to petition the Federal Government and the various state governments to join with the municipalities in the improving and the maintaining of the pavements on all state and Federal highway routes passing through municipalities."

Copies of this resolution are being sent to all state legislatures, 42 of which meet this winter, and to many chambers of commerce.

Another resolution of the City Oficials' Division, approved by the Board of Directors, outlined the following program which the City Officials' Division is to continue:

"The planning of street improvements so as best to facilitate the movement of traffic with safety;

"The most equitable ways and means for financing the improvement of our streets;

"The study of the design and construction of pavement structures;

"The developing of economical paving maintenance methods;

"The promulgation of traffic rules which will bring about the most economical and safest use of the public streets."

The Highway Division of the American Society of Civil Engineers, on January 22, during the annual convention of the Society in New York also presented to the attention of the Board of Direction of that Society the idea of petitioning the Federal and state governments to authorize cooperation with municipalities in the improvement and maintenance of pavements on through state and Federal routes within municipalities, and suggested to the Board the formation of a research committee for further study of the matter.

## The Taxation of Billboards

"COMPARISON of revenue yields in various states makes it clear that only those states which base the levy on space used secure considerable revenue" states James W. Martin, Director of the Bureau of Business Research of the University of Kentucky, in an article on "Special Taxes and Fees on Billboards" in the *Engineering News-Record* for November 13. Of the six states which make the amount of advertising the basis for the charge, Connecticut receives by far the largest revenue yield, with $38,000 in 1928 and $41,955 in 1929. Besides the flat rate of $100 on outdoor advertising companies, Connecticut charges $3 a year for each sign containing 300 square feet or less, $6 for each sign containing more than 300 and not more than 600 square feet, and $9 for each sign containing more than 600 and not over 900 square feet.

In general, Mr. Martin finds, "taxation on billboard advertising is of little consequence from a revenue-producing standpoint. It promises, however, to become of considerable importance in regulating the use of poster advertising on and near the highways." Fifteen states levy special excise taxes or fees on billboards: Alabama, Connecticut, Florida, Georgia, Kentucky, Massachusetts, Mississippi, Missouri, Nebraska, Nevada, New Jersey,* New Mexico, North Carolina, Tennessee, Vermont. Seven other states specifically authorize municipalities to impose such taxes; these states include California, Illinois, Iowa, Kansas, Pennsylvania (second-class cities levy for general revenue), Texas (only cities of 5,000 population or larger) and Wisconsin.

* See THE AMERICAN CITY for April, 1930, page 101; "Billboards to Be Regulated and Taxed in New Jersey."

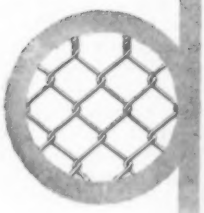
## Deaths from New York Street Accidents Decrease

### *But Fatalities to Children at Street Play Show Big Rise*

NEW YORK CITY, for the year 1930, shows the largest decrease in deaths from street accidents for any year since 1923. According to summaries compiled by the Police Department Safety Bureau and made public by Police Commissioner Edward P. Mulrooney, the total number of children killed in street accidents decreased similarly, but the fatalities due to playing in the roadways increased from 116 in 1929 to 137 in 1930, indicating that city streets are less than ever a desirable substitute for playgrounds.

The total number of street deaths in 1929 was 1,332, while in 1930 it was 1,260, a decrease of 72. Non-fatal accidents increased from 53,450 in 1929, to 54,495 in 1930, but this increase was the smallest recorded in any year since 1923. Of these totals, the deaths of children (16 years and under) were 992 in 1929 and 939 in 1930, while for injuries only the respective figures are 39,862 and 40,819. The chief single cause of accidents continues to be "jay-walking," although this shows a decrease of 91 fatalities. Crossing the street against traffic lights, however, caused 51 more fatalities and 140 more injuries than in 1929. Reckless driving, likewise, has caused a slight increase in deaths and injuries, while collisions showed a remarkable decrease.

*Made in our own mills from Ore to Finished Product*



# *Controlling the Crowds*

**Big events draw crowds and uncontrolled crowds soon become mobs. Keep them under control by enclosing the grounds with strong, substantial fence.**

**"Pittsburgh" Chain-Link Fence is made to withstand the onslaughts of enthusiastic crowds—a full-gauge, heavy-duty wire fabric, erected on a sturdy framework of specially-rolled "Pittsburgh" Seamless Steel Pipe. Pittsburgh Fence is protected against rust—made of rust-resisting copper-bearing steel and heavily zinc-coated after weaving. The framework, also copper-bearing steel and heavily zinc-coated, is our own seamless steel pipe, made in standard pipe weight, giving extra strength and durability to the erected fence. "Pittsburgh" Chain-Link Fence will give many years of satisfactory service, with a minimum of maintenance.**

**Let us bid on your fencing jobs. Expert erection service or counsel always available. Complete description and specification will be sent upon request.**

# Pittsburgh Fence

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Pittsburgh Steel Co.

**720 Union Trust Bldg. Pittsburgh, Penna.**

**New York**
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# THE TAXPAYER'S DOLLAR

**A Monthly Department of Budgeting, Assessment, Taxation, Accounting and Other Phases of Municipal Finance Conducted by A. E. BUCK, National Institute of Public Administration, New York**

## *Should Cities Receive Part of the Motor Taxes Imposed by States?*

THE League of Kansas Municipalities has recently published a report advocating a distribution to cities of a fair share of the gasoline and motor registration taxes now collected by the states. It argues that there is no sound reason why 72 per cent of each city tax dollar for road and street purposes should be spent to build state, county and township roads, or why 99 per cent of the city gasoline and motor-vehicle taxes paid by the city taxpayers should be spent in the country. The League does not think it quite fair that the motor-vehicle owners or those who use the country roads should pay for them and the highways in the cities should be paid for by abutting property owners and maintained by a general property tax, or, on the other hand, that the city taxpayers should help build county and township roads with their gasoline and motor-vehicle taxes and general property taxes while the farmers and other motor vehicle operators use the city streets free of charge.

The League proposes that a just and reasonable division of the road tax burden, at this stage of highway development, would be to give the Kansas cities one-half cent for each gallon of gasoline sold within the state ($1,600,000 annually) divided among the cities according to population. This revenue should be used for street construction and maintenance only, and the maximum levies for these purposes should be reduced by 1¼ mills. Twenty per cent of the motor-vehicle taxes collected from city residents ($720,000 annually) should be given back to those cities to be spent, three-fourths to help defray traffic control expenses and one-fourth for street construction and maintenance purposes. This would make it possible to reduce the maximum levies another one-half mill. If this proposal were adopted, the League contends, it would give the motor-vehicle owner and the city taxpayer a fair share of their annual $9,600,000 of gasoline and motor-vehicle taxes for the maintenance of streets and the control of traffic in the congested centers. At the same time it would give the general property taxpayer of the city a 10 per cent reduction in city tax burden.

## *Westchester County Budget Increased*

THE Westchester County budget for 1931, prepared by William B. Folger, recently appointed County Commissioner of Budget and Accounts, has reached a total of approximately $9,500,000, an increase over the budget of the previous year of $1,177,000. The tax rate of the county, however, will remain unchanged, namely, at 3.74, as in 1930. The gross total of the Westchester County budget is reported to be greater than were the budgets of each of fifteen states in 1930.

It is estimated that 40 per cent of the Westchester County budget, or $3,834,000, will be required to meet the county's debt service. The total county debt is said to be $67,439,615. Allowances have been made for an increase of this debt during 1931 by $11,340,000. The county welfare, health, and recreation work uses about another 30 per cent.

## *Elimination of Personal Property Tax Recommended in New York City*

THE elimination of the personal property tax, the assessments for which amount to $807,161,935 on the tentative rolls of New York City for 1931, has been recommended to Mayor Walker's committee on taxation by its special committee on tax administration. The reasons for abandoning this tax were stated in a recent letter from Lawson Purdy, chairman of the special committee, to Martin Saxe, chairman of the executive committee of the Mayor's committee. Mr. Purdy says in part:

"The state of New York was never afflicted by this tax in the extreme form in which it has been applied in many other states. To the extent to which we have suffered from this tax, the results have always been bad. To greater and greater degree this has been recognized, and from time to time classes of property have been removed from its operation. Finally, when the state income tax was adopted in 1929, intangible personal property was exempted from ad valorem taxation, and is now exempt by section 4A of the tax law. The effect of this legislation was to leave taxable at the local tax rate tangible personal property, but all corporations required to pay a franchise tax based on net income are exempt from taxation in respect of their personal property. We are therefore concerned almost exclusively with the taxation of the tangible personal property of natural persons. The classes of corporations liable to this tax are few, and property of this nature is inconsiderable, and but few of them are, in fact, assessed.

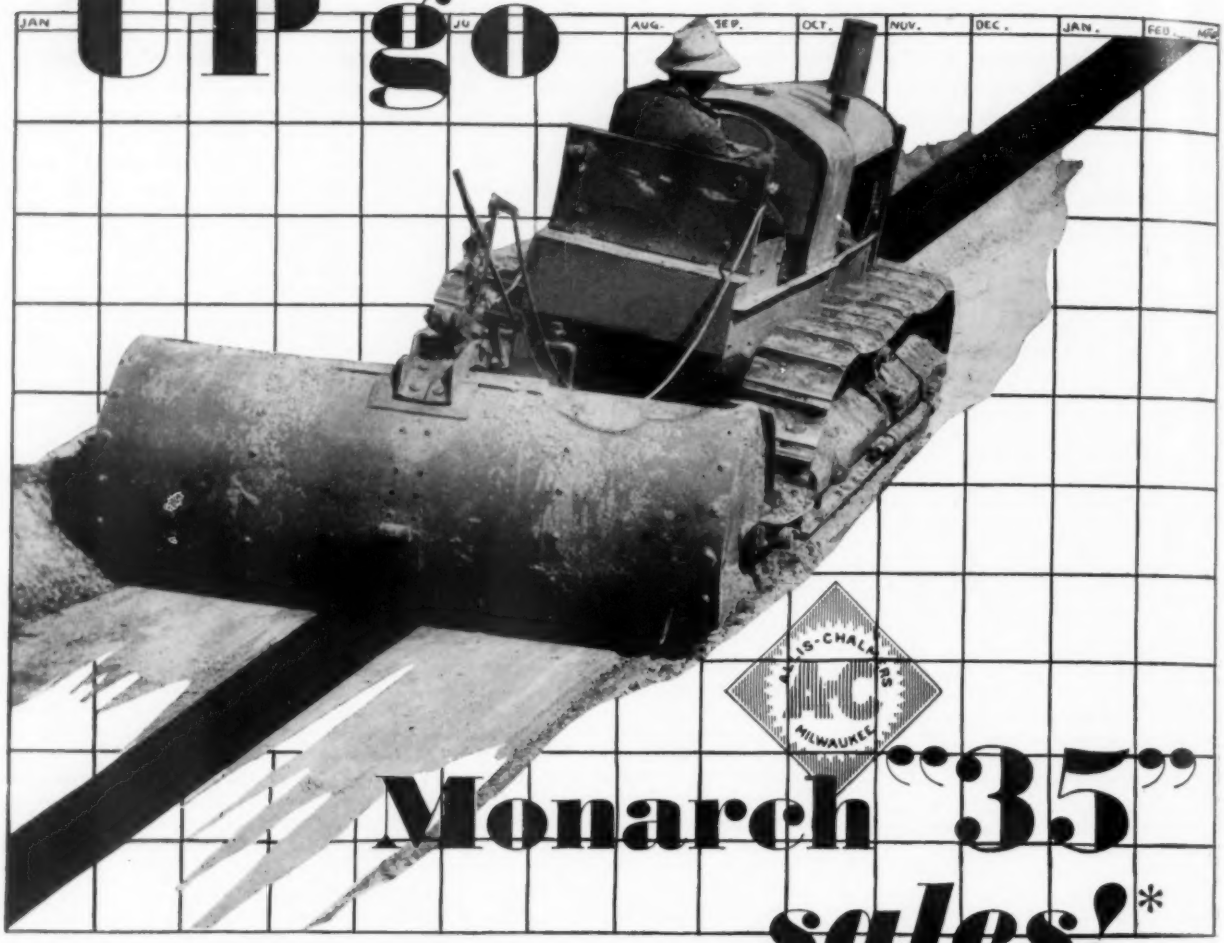
"For many years there has been very little effort made outside of the city of New York to assess personal property. For the year 1927 the total assessment of personal property in the state was $334,000,000, of which the city of New York contributed $308,000,000. In many of the cities and towns there was no assessment of personal property at all. The efforts of the Tax Department of the city of New York to assess personal property have frequently been the subject of ridicule because they assess watchmen, janitors, coachmen and the like for large sums of money when, if the circumstances of the persons were known, it would be obvious that they would not be liable to any such assessment. That is not the fault of the Department, but the fault of the law. People say jeeringly that the Department uses the City Directory and makes assessments at random. It is true that they did use the City Directory when there was a directory. Now they use the telephone book, the Social Register and such other sources of information as may be available. They do not make assessments at random. They are very painstaking about it. They assess few persons in the borough of Manhattan who reside east of Third Avenue, unless it be at Sutton Place and Tudor City. When a man moves from a side street to Riverside Drive, his assessment is increased. Likewise, when he moves to Park Avenue, he is favored with a substantial assessment. This is madness, but a madness imposed by law, and there is careful method in the madness.

"In view of the problem presented, it is not surprising that the assessment of personal estate on the annual record for 1929 was $1,154,000,000, and after the grievance period was over, there remained but $311,000,000. Ninety-one thousand persons were assessed, and the assessment against 45,000 was canceled. A tax was levied against persons owning this personal estate, to the amount of $7,953,000. Collections to date on account of that levy have been $1,737,562, which is less than 25 per cent of the levy. This is not surprising in view of the inevitable conditions under which the assessments were made. But if more diligence were exercised in eliminating the names of persons who should not have been assessed, and in cutting down the names that are added to the record of persons concerning whom the Department has no knowledge, the percentage of uncollectibles might be less. . . .

"The result of all the labor and effort is very little revenue, and the effect upon the public of being harassed and annoyed in this way must be exceedingly bad. Besides that, the effect upon the public mind of making a pretense of levying a tax which cannot be collected is to discredit the power of the state. One of the fundamental principles of taxation is that it shall be inevitable and unescapable. This so-called tax in not entitled to the name."

In commenting on Mr. Purdy's letter, the *New York World* said: "The farcical procession to City Hall for the purpose of 'swearing off' the so-called assessments (levied by a hopeful combination of divination and the telephone book) will soon be under way; and many thousands of innocent but irritated citizens will

# UP go

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again find themselves in the toils of one of the most grotesque archaisms in our municipal government. . . . How much time is wasted and how many tempers ruined in the footless business of 'swearing off' assessments, many of which are indefensible in the first place, no one knows. How great an opportunity the system offers for red tape, deadhead officials, favoritism or petty persecution is obvious. It is said that the city is waiting to find some other source of revenue to take the place of the personalty tax; but amid our towering budgets the abolition of a tax which does not bring in $2,000,000 a year would hardly be noticed, while there is no excuse for maintaining any tax so costly, so discriminatory in effect and so clearly unjust as this one."

The *New York Times* takes a similar position, saying: "No one can speak with greater authority on the subject than Lawson Purdy, President of the Department of Taxes and Assessments of this city from 1906 to 1917. His letter to Martin Saxe effectively riddles the present dispensation, for the inequalities of which the law rather than the commission should be held responsible. . . . The public is harassed. Taxation becomes a jest. Ninety-five thousand persons are assessed, forty-five thousand swear by all that is holy that they have been wronged. Discrimination breeds perjury. Many of those who let their names rest on the rolls just don't pay. Total collections last year, after all the fuss, were less than two million dollars. It is high time something were done to put an end to a tax which has long outlived its usefulness."

### *Personal Property Tax Administration a Failure in Chicago*

THE Joint Commission on Real Estate Valuation has recently issued a study of the assessment and taxation of personal property in Cook County. This study is the fourth in a series of reports on the tax situation in Chicago. The first report, dealing with the inequalities in assessments on real estate, was issued in July, 1927. The second report, issued in May, 1928, made definite recommendations on the findings of the first report. The third report was a study of the financial difficulties of the local governments in the Chicago area. It was issued in November, 1929, shortly before the Citizens' Committee, headed by Silas Strawn, was created to avert temporary bankruptcy.

The fourth report was prepared by John O. Rees, research director, with an introduction by George O. Fairweather, Chairman of the Joint Commission. In discussing the personal property tax, this report brings out several interesting things. It shows that the personal property tax roll of Chicago has shrunk in ten years by approximately $300,000,000. In 1918 the roll was $704,000,000, while in 1928 the indications are that it will not exceed $400,000,000. Many assessments are made against which taxes are not collected, or were never expected to be collected, but are nevertheless used for a part of the basis for public borrowing. There are no uniformly applied standards of assessing items of personal property of the same general character, just as there were none in the assessment of real estate.

The principal recommendation of the report is that the existing form of local tax organization, namely, the board of assessors and the board of review, be abolished, and that there be substituted therefor a single board of assessment and review, with one person as the assessor, responsible for making the assessment roll, and two other persons associated with the assessor as the appellate or reviewing side of the proposed new board.

### *Another Interesting Cost Data Report from Dundee*

ANOTHER report covering financial statistics, departmental costs, and comparative figures and estimates was issued in September by William Aiken, City Chamberlain of Dundee, Scotland. This report is more elaborate than its predecessor of a year ago and contains some very illuminating cost data on departmental operations. While these data are largely lacking in comparative value so far as American municipal government is concerned, they are nevertheless quite interesting in that they indicate the bases upon which such data may be built up for administrative purposes.

# The Municipal Bond Market

*By* SANDERS SHANKS, JR.
Editor, *The Bond Buyer*

THE recovery of municipal bond prices from the panic level to which they declined in mid-December represents one of the sharpest upward movements in the history of the market. Before the end of the first week of the new year, quotations were back to the 1930 highs, and the market appears to be stabilized at that level. As an illustration of the extent of the demand for bonds early in January, the experience of the syndicate which underwrote $50,000,000 New York City 4 per cent bonds last October may be cited. As of January 1 there was an unsold balance of $13,500,000 bonds in this account. The original offering price of 101 had been maintained since the issue was first offered. On January 15 the Chase Securities Corporation, syndicate manager, announced that the issue had been sold and the books would be closed.

The immediate future of municipal bond prices would appear to depend entirely upon the volume of new issues offered for sale. There is a possibility that offerings may be quite heavy, but the probability of this happening is considerably lessened by reason of the fact that several of the largest prospective borrowers are not likely to release their offerings unless they are assured that the market is in a condition to take them. We have in mind, particularly, New York State and New York City loans aggregating from $80,000,000 to $100,000,000. Both of these borrowers have the authority to finance through the issuance of short-term paper, for which there is an insatiable demand at extremely low rates, until such time as a sale of bonds may be made advantageously. The state of Arkansas has just negotiated such a loan, putting out six months' notes which will be taken up with the proceeds of a bond sale arranged at some later date.

In this time of general depression, there is a natural resistance on the part of taxpayers, legislators and public officials to the authorization or creation of additional public indebtedness. This condition should result eventually in a contraction of the volume of public borrowing, but the fact seems to be that for a while at least, the desire for economy in public expenditures for permanent improvements of the type customarily financed with loans will be offset by the demand for unemployment relief in the shape of an emergency program of state, county and city construction activity. Governmental bodies move slowly. While discussion of the unemployment problem has been going on for many months, many state and municipal authorities have yet to reach the point where loans to finance projects undertaken to give employment must be arranged. It is entirely probable that many communities will be borrowing money to finance projects undertaken to help those thrown out of work by the recession in general business long after business has recovered and there is no more than a normal amount of unemployment.

The following table, giving the details of recent sales of new issues, will indicate the current level of municipal bond issues:

| Amount | Municipality | Rate (%) | Maturity | Net Basis (%) |
|---|---|---|---|---|
| $3,200,000 | Buffalo, N. Y. | 3.90 | 11¼-yr. (avg.) | 3.84 |
| 250,000 | Lowell, Mass. | 4 | 1-25-yr. (ser.) | 3.97 |
| 240,000 | Fresno Co., Calif. | 4 & 4½ | 14-yr. (avg.) | 4.06 |
| 150,120 | Franklin Co., Ohio | 4¼ | 9-yr. (avg.) | 4.14 |
| 20,000 | Shorewood, Wis. | 4¾ | 16½-yr. (avg.) | 4.29 |
| 16,500 | West Kittanning, Pa., Sch. Dist. | 4½ | 7 5/6-10½-yr. (op.-avg.) | 4.46 |
| 234,000 | Genesee Co., Mich. | 4½ | 7-yr. (avg.) | 4.49 |
| 300,000 | Washington Suburban Sanitary Dist., Md. | 4½ | 30-50-yr. (opt.) | 4.60 |
| 15,000,000 | State of Arkansas | 4¾ | 6-mos. | 4.69 |
| 125,000 | Mobile Co., Ala. | 5 | 17 2/3-yr. (avg.) | 4.92 |
| 25,000 | Berlin, N. H. | 4½ | 6-yr. (avg.) | 5.14 |
| 200,000 | Coahoma Co., Miss. | 5¼ | 14¾-yr. (avg.) | 5.22 |
| 70,000 | Triplett Tp., Mo. | 5 | 10½-yr. (avg.) | 5.78 |

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# THE CITY'S LEGAL RIGHTS AND DUTIES

**Conducted by A. L. H. STREET, Attorney at Law**

### Benefit Assessments

*Property owner's written consent to assessment plan held not subject to oral condition—such consent precludes attack upon assessment*

Where a property owner signed a statutory consent to assessment of his property for a street improvement under a 10-year payment plan, he precluded himself from afterwards asserting that he signed on an oral condition that there was to be a reduction in the assesment. He also precluded himself from afterwards questioning the legality of the assessment.

In reaching the above-stated conclusions in the case of *Lilly v. City of Irvine*, 26 S. W. 2d, 566, the Kentucky Court of Appeals said:

"The statute does not provide for any conditional acceptance by the property owner or the granting of any conditions by the city. The alleged condition is in the teeth of the statute, and all parties were bound to take notice of its provisions. The city issued the bonds upon the written acceptance signed by appellant, and it is too late for him now to set up this condition not warranted by the statute or so far as appears made known to the city when it acted, for it is not alleged to whom appellant delivered the paper on the alleged condition.

"Appellant insists that the resolutions and ordinances adopted by the city are insufficient. But he cannot now rely on this, for under the terms of the statute by his acceptance of the 10-year plan he waived all this. He cannot now maintain that the assessment is confiscatory; for his acceptance of the 10-year plan was an agreement to pay the assessment in 10 yearly payments. The assessment by the front foot has been often sustained by the court. . . . After accepting the 10-year plan, the defendant cannot maintain that only a 50 per cent assessment should have been made; for his acceptance of the 10-year plan was a waiver of all objections to the amount of the assessment."

### Nuisance Abatement

*Elevated loading platform occupying sidewalk space was an abatable nuisance although city had sanctioned construction.*

Defendant city had a right to remove a loading platform constructed to a height of 3½ or 4 feet above the sidewalk grade by a wholesale house on a "white-way" street frequented by pedestrians, although it had been maintained for many years and the city may have originally sanctioned its construction. (Texas Court of Civil Appeals, *J. M. Radford Grocery Co. v. City of Abilene*, 20 S. W. 2d, 255.) Said the Court:

"The governing body of a city is without authority to donate or barter away for private use the public rights in streets and highways, or to grant any permanent or unlimited use or easement by ordinance or otherwise to any individual or private corporation engaged in the transaction of private business and for their respective uses as such."

### Milk Regulations

*Sale of milk may be regulated by providing for destruction of substandard milk, etc.*

Reasonable regulations providing for the inspection of milk sold within the corporate limits and forbidding its sale when below a prescribed standard, and authorizing its summary destruction if found to be impure, and levying a reasonable license fee for the privilege of distributing such milk in accordance with such standards, are valid and constitutional as being within the police power of cities of the first class in Oklahoma. (Oklahoma Criminal Court of Appeals, *Grider v. City of Ardmore*, 287 Pac. 776.)

### Important Legal Decisions

involving municipalities, as reported in this department during 1929, are indexed and classified in the 1930 MUNICIPAL INDEX. This reference list, commencing on page 151 of the 1930 INDEX, supplements lists appearing in the 1929 and 1928 volumes. A similar feature will appear in the 1931 MUNICIPAL INDEX now in preparation.

### Taxation of City Water Plant

*City water plant serving outlying territory held taxable*

Because a municipal water plant received more than one-third of its revenues from the sale of water to consumers outside the city limits, the Virginia Supreme Court of Appeals decided in the case of *Warwick County v. City of Newport News*, 151 S. E. 417, that the plant was taxable. Right to constitutional exemption depended upon the plant's being used "wholly and exclusively for city purposes." In the course of an extended opinion, the Court said:

"It is, of course, generally true that property owned by a city and used for public purposes is exempt from taxation. The general rule is that, while all property is taxable, a recognized exception thereto is that public property, devoted to public purposes, is not taxable. . . .

"It is undoubtedly true that a city may supply limited quantities of water to persons outside of the city as a mere incident to the enterprise as a whole, and certainly when the total amount is as small as that shown in the Richmond City case it may be treated as inconsequential, and the property will nevertheless be exempt from taxation as devoted wholly to municipal purposes. We do not intend by anything appearing in this opinion to impinge in the slighest degree upon that reasonable construction of the section (183). Cities and towns owning a water-supply acquired for the public purposes of such cities may thus dispose of such surplus production, . . . It is not only permissible but proper to do so, so long as this does not prevent the full discharge of its duties to its own citizens, and this alone will not defeat the exemption."

### Water Charges

*Borough held to have improperly discontinued water supply to schools pending dispute over right to charge therefor*

A school board was granted an injunction against discontinuance of a water supply by the borough's pending a determination of the borough's right to charge the board for water service, in the case of *Board of Education v. Mayor and Council of Borough of Glassboro*, 149 Atl. 820, decided by the New Jersey Court of Chancery. The Court said:

"There can be no doubt of the right of a water company to shut off supply of delinquent patrons or even require advance payments covering reasonable periods. That right is an incident to corporations of that nature, and obtains independently of legislative sanction. . . . The right is based upon the necessities of the situation; the public duty exists to supply water to all who demand it; that duty could not be performed without adequate protection against losses. In this state our statute sanctions the right. . . . But the right, wholly based on reason and necessity, must be exercised with reason and within the field of the necessity on which it is based, and neither reason nor necessity can be said to exist to justify shutting off water from the public schools by reason of a brief default in payment, especially when it is well known that the refusal to pay is because of a claim of exemption. If the borough is entitled by law to charge for the water, a mandamus to enforce the duty of payment cannot fail and no losses need be encountered."

### Tax Exemption

*City council cannot exempt from payment of taxes lawfully assessed*

A city council has no right to exempt an individual or his property from the payment of taxes lawfully assessed, according to the holding of the Texas Court of Civil Appeals in the case of *Valdez v. City of Laredo*, 29 S. W. 2d, 802.

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### Liability for Purchases

*Unauthorized purchase of supplies held not ratified by city council*

Under oral direction from the Mayor, two Aldermen, without action of the Council, purported to bind a Missouri city by buying 1,000 feet of fire hose. Later the Council ordered issuance of a warrant for part of the purchase price, but it was not paid, for want of funds. Under these circumstances, the Springfield, Mo., Court of Appeals decided (*General Manufacturing Co. v. City of Portageville*, 28 S. W. 2d, 119) that the city was not liable for a balance due on the purchase price, although the hose was received and used by the city. Said the Court:

"In this case the board did nothing. The Mayor, who orally directed the two Aldermen to purchase the hose, had no authority to give such direction. The result is that this contract signed on behalf of the city by parties not authorized to act for the city was void from the beginning. This much is practically conceded, but it is contended that the city board afterward ratified this contract by ordering and issuing a warrant to pay the balance due. . . . This warrant was void because there were no funds in the treasury with which to pay it when it was issued or when it was payable. . . .

"In any event, the contract to purchase the hose was void when made because executed on the part of the city without authority, and, being void, could not be ratified, because there was nothing to ratify. A contract by a city made with authority, but lacking in some way in its execution, may be ratified. . . . But a contract correct in form, but void for want of power to execute it, cannot be ratified. . . . To ratify a void contract would be in direct violation of section 2164 of the statute, which expressly provides that it must 'be made upon a consideration wholly to be performed or executed subsequent to the making of the contract.' . . The so-called ratification would be nothing more than an attempt to make a contract based on a past consideration, which is in direct conflict with the statute."

### Liability for Obstruction

*City may be held liable for accident to pedestrian while passing around building material unreasonably obstructing sidewalk*

There being no state court whose decisions are of greater weight than those of the New York Court of Appeals, the decision of that tribunal in the case of *O'Neill v. City of Port Jervis*, 171 N. E. 694, is of more than ordinary importance. The Court recognizes that, where an abutting property owner unreasonably obstructs a sidewalk, necessitating pedestrians' walking into the part of a street traveled by vehicles, such owner and the city may be held liable for death of a pedestrian struck by an automobile —assuming that the pedestrian used due care for his own safety, etc. In an extended opinion the Court said:

"The primary purpose of streets is use by the public for travel and transportation, and the general rule is that any obstruction of a street or encroachment thereon which interferes with such use is a public nuisance. . . . An adjoining property owner may, however, temporarily use a portion of the street or highway for taking goods or merchandise in or out of his premises. . . . Likewise, a person engaged in erecting a building may be obliged to use the sidewalk or street temporarily for the piling or storing of material, such as lumber, brick, and sand, or for the unloading of articles upon the sidewalk, or while constructing foundations or other parts of the building. All these uses, however, must be reasonable, temporary, and such as is usual and customary in connection with the particular business or construction. . . . The municipalities generally provide rules or regulations controlling the manner and times in which these interruptions may be made, but beyond the regulation of these necessary and temporary uses, no municipality has the power to authorize the appropriation of a sidewalk for private purposes."

### Liability of Town Treasurer

*Town treasurer and his surety held not liable for loss in closing of a bank in which the treasurer was employed, there being no bad faith or negligence*

Dismissing a suit against a Town Treasurer and his surety on account of funds lost through closing of a bank in which they were deposited, the Iowa Supreme Court said in the case of *Town of Danbury v. Riedmiller*, 226 N. W. 159:

"It appears that the Treasurer was the Assistant Cashier of the bank in which the funds were deposited. His duties appear to have been limited mainly to performing the functions of a bookkeeper and janitor. He was not a director of the bank, and was not authorized to make loans. The evidence affirmatively established that he had no knowledge or notice that the bank was insolvent, or in any danger of closing. The deposits were made in good faith, and there is no such showing in the records as could charge the Treasurer with negligence in making said deposits. Under the law as it existed at the time and under the record in this case, it must be held that the deposit by the Treasurer in the bank was not an unlawful deposit, and that there was no breach of the Treasurer's bond by the making of said deposit and the subsequent loss of the funds through the failure of the bank."

### Liability for Falling Limb

*City held liable for injuries caused by falling limb of a tree that negligently had not been inspected*

A judgment for nearly $25,000 against defendant city, on account of injury to a minor struck by a limb of a maple shade tree that fell upon him in a street, was affirmed by the Appellate Division of the New York Supreme Court in the case of *Tagg v. City of Lockport*, 238 N. Y. S. 662. That the decision was influenced by the fact that the city had a Park and Shade Tree Commission is indicated by the following extracts from the opinion:

"Defendant was obligated to exercise reasonable diligence in making inspections and tests of shade trees located upon its streets. And, in instances where such examinations revealed tree conditions reasonably likely to cause physical injury to persons beneath the trees, the obligation rested upon the municipality to remove or repair dangerous trees. . . .

"The Lockport Park and Shade Tree Commission had been created by statute, and, when the limb fell from the tree in question, and for some years prior to that time, the Commission had been functioning. It was composed of men supposedly expert as judges of trees. The record justifies the conclusion that this Commission had not examined this tree, nor the trees in this neighborhood, for over a year before the mishap. . . .

"The Superintendent of Streets, who was also Chairman of the Park and Shade Tree Commission, testified that a rapid-growing tree, like the one in question, is more apt to decay; that it reaches an enfeebled condition sooner than a longer-lived tree; that the tree in question was practically 85 to 90 years old, had been on the decline for some years, and was getting in an enfeebled condition. In the estimation of the judges of the facts, the possession of this general information by the defendant's representative might well have carried with it an obligation to make more frequent and better examinations and tests—might well have convinced the jury that the city negligently failed to give such attention to the tree detail as the circumstances fairly required."

### Movie Censorship

*Municipal censorship of moving-picture films upheld*

The validity of an ordinance providing a censorship over moving-picture exhibitions in Chicago, and action of the board of censors in refusing to permit showing of "The Alibi," a picture depicting crime and the use of "third degree" methods by police officers, were upheld by the Illinois Supreme Court in the case of *United Artists Corporation v. Thompson*, 171 N. E. 742. The Court said:

"The power of a city to provide for a board of censors and to require a permit before any moving picture can be exhibited in a municipality cannot be doubted. Moving-picture shows, by reason of the low price of admission, are frequently patronized by large numbers of children, as well as by those who by reason of limited or local conditions cannot attend the productions given in regular theaters. The audiences include those classes whose age, education, and situation in life especially entitle them to protection against the evil influence of obscene and immoral representations. The welfare of society demands that every effort of municipal authorities to afford such protection shall be sustained unless it is clear that some constitutional right is interfered with. . . . Respect for law is the basis of our civilization, and any production which tends to cause disrespect for law and the officials charged with its enforcement, would tend to immorality, and the exhibition of such picture would necessarily be attended with evil effects upon youthful spectators."

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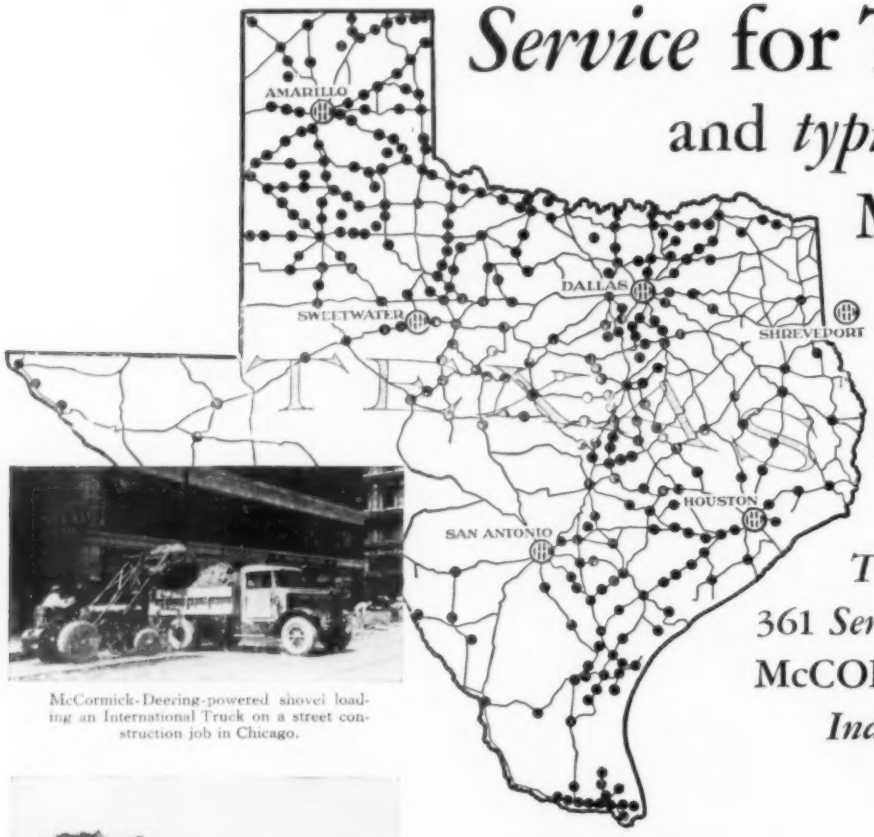




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# McCORMICK-DEERING INDUSTRIAL TRACTORS

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

# ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

## Recent Zoning Ordinances

NEW HAMPSHIRE.—Concord, December 13, 1930.

NEW JERSEY.—Bloomfield, December 15, 1930.

NEW YORK.—Ossining Village, December 16, 1930.

## Zoning Ordinance—Enforcement—Constitutionality

CONNECTICUT.—*Coombs v. Larson*, 152 Atl. 297.—Power to enforce zoning regulations will be implied, as among incidental necessary powers.

Injunction, besides any other remedy known to law, is available to enforce necessary powers.

Non-fundamental procedural irregularities under the zoning statute are unavailable to landowners claiming unconstitutionality who had not invoked remedies by appeal to the board of adjustment or the court.

Landowners seeking injunction have waived the right to attack the constitutionality of the zoning statutes; not alleging unconstitutionality when petitioning to have the property zoned, and not appealing from the denial of the petition.

## Highways

KENTUCKY.—*Lee v. Macht*, 31 S. W. 2d, 906.—An abutting owner is not entitled to the removal of a spur track supported by concrete pillars in the street, no unreasonable obstruction to his rights of access, light, air, etc., having been shown. Nor was there any taking of his property; at most the track was a public nuisance, for which the plaintiff could bring an action neither for its abatement nor for damages, in the absence of any special or peculiar injury to him over and above that suffered by other members of the public.

## Vision Clearance

NEW JERSEY.—*Frelinghuysen v. State Highway Commission*, 152 Atl. 79.—A statute authorizing the commission to take lands by eminent domain with compensation, for the purpose of eliminating obstacles to the view of travelers on intersecting highways is constitutional; but the commission cannot take all of the right, title and interest of the landowners, but only an easement necessary for the purpose.

## Zoning—Land

NEW JERSEY.—*State v. Borough Garage, Inc., and Borough Realty Co.*, reported in a bulletin of the Bureau of Municipal Information of the New Jersey State League of Municipalities, Trenton, December 18, 1930. The defendants are lawfully conducting business as a non-conforming use in a building, erected and so used in a residential district before the passage of the zoning ordinance creating the district, and ever since. The ordinance was passed subsequent to the passage of the amendment to the state constitution authorizing zoning and under that amendment. After the passage of the ordinance the defendants began to use and are still using a road, on their own land, for business purposes of access to that building. The ordinance provides that: "A driveway or walk used for access to a business or industrial use shall in no case be permitted as an accessory use"; and that no non-conforming use shall be extended at the expense of a conforming use.

The state claims that the road is being used contrary to the zoning ordinance, and is bringing this criminal prosecution for the penalty therefor.

*Held*, that the ordinance was not authorized by the constitution, and was invalid. The constitution does not authorize the zoning of land, but of buildings and structures. The road is not a structure within the meaning of the constitution. The only reference to land or area made in the statute is that of power to limit the percentage thereof occupied by buildings. This is well within the constitution, because the limitation of the area depends upon the size of the building. So, in regulating the size of the building, the percentage of the lot area is controlled.

## Appeals

NEW JERSEY.—*Stokes v. Jenkins*, 152 Atl. 383.—An adjoining property owner could maintain suit to enjoin the violation of the side-yard requirements of a zoning ordinance without having appealed from the action of the building inspector granting a permit to move the building.

## Airports

RHODE ISLAND.—*State Airport Commission v. May*, 152 Atl. 225.—A statute authorizing the condemnation of land for an airport which fails to provide for loss of business conducted on the property does not conflict with the constitutional provision requiring just compensation for land taken for public use. Such incidental loss or inconvenience must be borne by the owner in the interest of the general public.

## Garage

WISCONSIN.—*Ballstadt v. Pagel*, 232 N. W. 862.—In determining whether a building to be erected would be a nuisance, some weight must be given to social considerations, using the term in its broad sense. Therefore, a garage and oil station to be erected and the business to be carried on therein in a purely residential section, constitutes a nuisance.

## Light and Air

WISCONSIN.—*Depew v. United States National Bank*, 233 N. W. 851.—To create easement of light and air, words must be employed which clearly show the intention to create such an easement. Such easements over adjoining premises are not favored. They are not created or acquired by prescription. They do not exist by implication from necessity in favor of a lessee. Where the lessor has expressly reserved the remaining property, no words need be used to withhold an easement of light and air.

## Protection of Airports

A report of a committee on Airport Zoning and Eminent Domain, appointed by the United States Department of Commerce, appears in the Air Commerce Bulletin of January 2, 1931, published by the Department, and will soon be issued in pamphlet form. The report shows the various legal methods by which, with due consideration to neighboring land owners, airports may be protected from obstacles to aviators, and other disadvantages. An appendix contains a suggested form of State Airport Enabling Act, and examples of existing legislation.

## SIDEWALK PEDDLING PROHIBITED

OBSTRUCTION of the sidewalks of Rockville Center, N. Y., by goods, wares or merchandise has been prohibited by an ordinance which became effective September 1, providing that:

"No person, firm, association or corporation who is the owner, occupant or lessee of any premises abutting on any street, avenue or highway in the village of Rockville Center, Nassau County, N. Y., shall place, keep, permit or suffer to be placed or kept, on any sidewalk in front of, adjoining or adjacent to such premises, any goods, wares or merchandise of any description, within 10 feet of the street curb, but nothing contained in this ordinance shall prohibit persons from placing goods, wares or merchandise or household furniture on the sidewalk temporarily, while loading or unloading the same, providing it be done without unreasonable delay, and providing that such goods, wares and merchandise are not allowed or permitted to remain on said sidewalk within the prohibited area for a longer period than one hour."

Any person violating the ordinance may be fined up to $10 for each offense, and shall be declared a disorderly person.

NOTE.—See page 167 for model ordinance.

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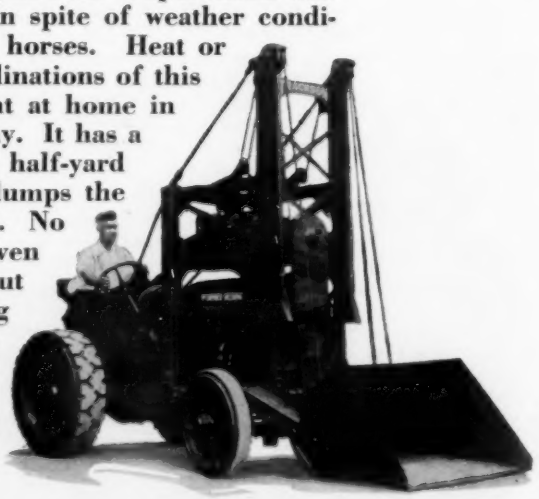

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# MUNICIPAL AND CIVIC PUBLICATIONS

**Prices quoted do not include postage, unless so stated.**

### Stadiums

*The Stadium—A Treatise on the Design of Stadiums and Their Equipment.—By Myron W. Serby, Consulting Engineer. American Institute of Steel Construction, Inc., New York.* 64 *pp.* 1930. $1.50.

In what is believed to be "the first attempt to organize all data and information relating to the art of stadium design," Mr. Serby presents a practical handbook for engineers and officials concerned with stadium design. Two major types of stadiums are distinguished, those intended primarily for football and those for baseball. Many other uses are possible. Plot plans, design formulas for good view, structural considerations, equipment and conveniences, and costs, are discussed, with references to well-known structures in this country and abroad, a number of which are illustrated by photographs and diagrams. A bibliography, 1914-1929, is included.

### Trees

The Proceedings of the Massachusetts Tree Wardens' and Foresters' Association, Summer Meeting, 1930, are published in the form of a 20-page pamphlet. The papers and discussions are of interest and value for city foresters and others. (Apply to Secretary-Treasurer, City Hall, Salem, Mass.)

### Zoning Problems

L. Deming Tilton, technical advisor to the Zoning Committee, Planning Commission, Santa Barbara County, Calif., has completed a study of certain proposed changes in the zoning ordinance of Montecito as these have a bearing upon the whole district. The results are published in a 64-page quarto volume (mimeographed), illustrated with folded inset charts, and photographs, under title, Preliminary Report upon Highway and Zoning Problems, Montecito, Santa Barbara County. To quote John D. Wright, Chairman of the Zoning Committee: "This report has real constructive value . . . to other sections of our country where citizens are studying community development problems and endeavoring to plan for the future so that there may be . . . the most effective use of all property and natural advantages." (Apply to the Committee, Santa Barbara, Calif.)

### Housing Standards

The "Housing Standards, with Particular Reference to the Health, Safety and Welfare of Children" which were drawn up by a special committee appointed by the White House Conference on Child Health and Welfare are reprinted in full in the December number of *Housing* (pp. 246-255), and will shortly be published as part of a separate pamphlet. The standards are divided into five sections: Neighborhood; Lot; House Exterior; House Interior; Fundamental Equipment. Single copies of *Housing* are $1.25. (Apply to the National Housing Association, 105 E. 22d St., New York.)

### Housing

"Towards Better Housing in Los Angeles" is a report of the first housing conference held in that city. The conference met in September and organized the Joint Legislative Committee on Better Housing in Los Angeles, to work out proposed legislative measures for relief. Besides the proceedings of the meeting and a reading list on housing, the report contains addresses by Dr. George B. Mangold, Professor of Sociology, University of Southern California ("The Social Aspects of Housing"); Siegfried Goetze, Chairman, Housing Committee, Municipal League of Los Angeles; and Pearl Chase, Chairman, Santa Barbara Committee, Better Homes in America, Inc. ("Possible Activities of a Housing Association"). 20 pp. mimeographed. (Apply to Siegfried Goetze, P. O. Box 1417, Station C, Los Angeles, Calif.)

### Who's Who

*Who's Who in Government. Biographical Research Bureau, Inc., New York. Vol.* 1, 1930. 800 *pp.* $10.00.

Biographical information about more than 12,000 governmental office-holders in the United States is contained in the first volume of a new reference book, "Who's Who in Government." In alphabetical and geographical order the directory lists prominent diplomatic, Army, Navy, Federal, state, county and city officials. The publication is first of its kind, and fills a need by presenting in compact form material which was previously scattered in numerous volumes often inaccessible. Some unavoidable omissions are to be regretted, but will doubtless be remedied in the next edition.

### Yearbook

Instead of appearing this year as part of the March issue of *Public Management*, the 1931 City Manager Yearbook is published in a cloth-bound edition. It contains the proceedings of the 1930 convention of the International City Managers' Association, and, for the first time, a complete membership list of the Association. A number of papers by recognized authorities, on subjects of concern to all city managers, are a feature of the volume, which also includes, as in former years, an up-to-date directory of city managers, a list of council-manager cities by states, with dates and other details. 300 pp. $2.00. (Apply to the Association, 923 E. 60th St., Chicago, Ill.)

### Probation

The eighth report in the Thomas Skelton Harrison Foundation Municipal Court survey series discusses "Criminal Division Probation in the Municipal Court of Philadelphia." The survey was prepared for the Bureau of Municipal Research of Philadelphia by George E. Worthington, General Secretary and Counsel, Committee of Fourteen, New York City, and formerly Acting Director, Department of Legal Measures, The American Social Hygiene Association. The men's division and the women's division of the Municipal Court are considered separately. 42 pp. (Apply to the Bureau, 311 S. Juniper St., Philadelphia, Pa.)

### City Manager's Report

The Citizen's Yearbook of the city of Oklahoma City, 1929-1930, is the third annual report of the City Manager, E. M. Fry, covering the fiscal period ending June 30, 1930. Forty milestones of progress are listed in the introduction. The report, illustrated with charts and diagrams, is divided into five parts: The City's Growth; General Government; The City as an Employer; The Public Contact Departments—(a) Preservation of Life and Property, (b) Water and Engineering, (c) Culture and Recreation; Special Projects and Problems; Rate and Fee Schedules; The City's Future. 87 pp. (Apply to the City Manager, Oklahoma City, Okla.)

### Road Taxes

A folder entitled "Cities Burdened by Road Taxes" has been prepared by the League of Kansas Municipalities to present a proposal for the relief of the present situation whereby cities in the state now pay over 60 per cent of the state, county and township road bills. "Over-tax-burdened cities cannot buy or consume excess farm products, they cannot attract industries to the state, and they cannot make needed city improvements," states the pamphlet. By the proposal offered, cities will give 80 per cent of their gasoline and motor-vehicle taxes to build state, county and township roads, and will use their $2,300,000 share of gasoline and motor-vehicle taxes to pay street and traffic-control bills and to cut their general property taxes 10 per cent. 8 pp. (Apply to the League, Lawrence, Kans.)

### Water Analysis

*Elements of Water Bacteriology.—By Samuel Cate Prescott, Professor of Industrial Microbiology and Head of the Department of Biology and Public Health, Massachusetts Institute of Technology; and Charles-Edward A. Winslow, Professor of Public Health, Yale School of Medicine. John Wiley & Sons, Inc.* 1931. 219 *pp. Illustrated.* $2.50.

This fifth edition of a standard work for waterworks officials makes its appearance at a time when there is increasing interest in water bacteriology and in the extension of studies to the sanitary control of milk and other foods. Details of the older methods of analysis have been retained and those of the newer methods introduced which would be of particular value in presenting a true picture of the present sanitary conditions of any particular water that is used for domestic purposes, as well as determining the degree of purification secured by some special forms of treatment employed to transform a questionable supply into one of satisfactory qualities. Another important consideration is the study of progressive changes which occur in the transformation of sewage or wastes into effluents which shall be free from danger of transmitting infection or producing other objectionable after-results, with particular reference to their use as sources of water supply after having flowed into large bodies of water.

### Town Plan

"A Collaborative Town Plan for the Development of Three Suburban Villages—La Grange, Western Springs, La Grange Park, Illinois" has been prepared under the direction of the Village Planning Commissions by Jacob L. Crane, Jr., consultant. This is a logical step in the development of these three Chicago suburbs, which lie side by side and have "common interests and problems in matters of transportation, street and highway development, zoning of private property, and school and recreation facilities." 51 quarto pp., including maps and photographs. (Apply to Mr. Crane, Wrigley Bldg., Chicago, Ill.)

### Classification of Employees

The Budget Commissioner of the city of Boston, Mass., has prepared "A Proposal for the Classification and Compensation of Employees of Suffolk County," in accordance with Chapter 400 of the Acts of 1930. Schedule A of the report contains descriptions of the classes of positions determined, in alphabetical order, with a suggested schedule of compensation. Other appendices are a compensation rate index; proposed rules for administering the classification and compensation plans; and exempt positions. 52 pp. mimeographed. (Apply to the Budget Commissioner, Boston, Mass.)

### Refrigerating Systems

An ordinance for the "Regulation of the Design, Construction, Installation and Inspection of Refrigerating Systems," recommended by the Committee on Public Health and passed on December 11, 1930, by the City Council of the city of Chicago, is published, with two ordinances recommended by a minority of the Committee on Public Health, as Pamphlet No. 110. 18 pp. 3c. (Apply to the Municipal Reference Library, 1005 City Hall, Chicago, Ill.)

### Taxation

"State Income Taxation," publication No. 31 of the League of Minnesota Municipalities, is published "for informational and reference purposes." The report is divided into five parts: Growth of the Income Tax Movement; Chief Features of State Income Taxes; Administration; Conclusions; What Minnesota Could Expect from an Income Tax. A brief bibliography is appended. 34 pp., including a number of charts. 50c. (Apply to the League, 16 University Library, Minneapolis, Minn.)

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### Modern Architecture

*The New World Architecture.—By Sheldon Cheney. Longmans Green and Company, New York. 304 pp., large quarto.* 378 *illustrations.* $10.00 *from* THE AMERICAN CITY.

This is a glorious record of the emerging architecture of the twentieth century. The New York and Chicago skyscrapers, the California residence designs, the "prairie house" of the Mid-West here take their place with the distinctive products of Germany, Holland, and the Scandinavian countries in what is presented as a world movement of vast import. So also do the architects: Frank Lloyd Wright, Eliel Saaranen, Maybeck, Oud, Gropius, Ostberg, Urban, Norman Bel Geddes, Le Corbusier and Hugh Ferriss, as well as a host of others. In evidence of the author's conviction of the clean break already virtually made with the past, he gives us (except for a few pictures introduced for the purpose of contrast) in all the nearly 400 illustrations not a single Greek column or Gothic buttress or Romanesque portal or English palladian window. He adheres rigidly throughout to the building *design* that has grown organically out of the machine-age methods and materials.

But the work is concerned less even with methods and materials than with architecture as a social and spiritual manifestation of the times, the place and the people producing it. In the great movement which he presents in sweeping outline, Sheldon Cheney sees "a new mode established constituting an architectural revolution more fundamental than any since the seventh century, with principles and methods underlying it nearer to universal than any that have previously governed building art": a new mode as one of the early evidences of a new world order not yet to be appraised but wherein the world itself will be the unit; humanity the watchword.

The final chapter on "The City as Architecture" contains material challenging and provocative to those in whom authority and responsibility for planning progress are vested.

### Work Farms

The Board of Work Farm Commissioners of St. Louis County, Minn., invited the Taxpayers' League of St. Louis County a year ago to make a study of the Work Farm and to make suggestions for its improvement. A 76-page mimeographed report "The St. Louis County Work Farm," presents the findings of the survey and its recommendations. (Apply to the League, 917 Torrey Bldg., Duluth, Minn.)

### Record Filing

The seventh report by the Philadelphia Bureau of Municipal Research in the Philadelphia Municipal Court Survey Series, published by the Thomas Skelton Harrison Foundation, has been prepared by Arthur Dunham, Secretary of the Child Welfare Division of the Public Charities Association of Pennsylvania, under the title "Filing of Special Care Records in the Municipal Court." "The purpose of this report is to appraise the efficiency in the various divisions of the municipal court." 51 pp. (Apply to the Foundation, 311 S. Juniper St., Philadelphia, Pa.)

### Traffic

The Traffic Engineering Bureau of the National Safety Council, at the request of the city of Richmond, Va., and with the assistance of city departments and representatives of local organizations, made a survey of Richmond's traffic problems in connection with its research activities. This has been published by the Council under the title "Reorganizing Street Traffic—Richmond, Virginia." A recommended traffic plan for Richmond is outlined on the basis of the studies made. Diagrams and maps are included which analyze traffic congestion and accidents. 37 quarto pp. (Apply to the Council, 20 N. Wacker Drive, Chicago, Ill.)

### Clean-Up Campaigns

A wealth of material for use in local clean-up and paint-up campaigns, is available from the National Clean Up and Paint Up Campaign Bureau, and is displayed in "Practical Examples," which consists of three sections of 8 newspaper-size pages each. Campaigns which have won prizes for cities and towns in various parts of the country are described and illustrated. Single copies are free; additional copies, 10c each. (Apply to the Bureau, 310 E. 45th St., New York.)

### A. S. T. M. Standards

The 1930 edition of this triennial publication of the American Society for Testing Materials contains the Society's 427 standard specifications, methods of test, definitions of terms and recommended practices in effect at the time of publication. It appears in two volumes: Part I, Metals, comprising 176 standards relating specifically to metals and 3 that are of a general nature, applying to both metals and non-metals; and Part II, Non-Metallic Materials, with 251 standards, including 48 relating to road materials, 39 to cement, lime, etc., 28 to coal, coke, timber, etc., and the three general ones also published in Part I. In both parts appears a complete current list of standards and tentative standards. Supplements to the book will be published in each of the two years intervening before its next complete edition. Part I contains 1,000 pages, Part II, 1,214. Each part is $7.50 in cloth and $9.00 in half-leather. Both together are $14.00, cloth, and $17.00, half-leather. (Apply to the Society, 1315 Spruce St., Philadelphia, Pa.)

### Nacos

The Proceedings of the Sixteenth Annual Meeting of the National Association of Commercial Organization Secretaries and the list of members of the Association fill a paper-bound volume of 448 pp. The minutes of the meetings, the addresses and committee reports are included, as well as the "Forty Best Service Ideas for 1930." (Apply to Gerrish Gassaway, Secretary-Treasurer of the Association, Chamber of Commerce, Wilmington, Del.)

### Unemployment

The Russell Sage Foundation Library has published as Bulletin No. 104 a bibliography on unemployment, listing programs and recommendations, general books, surveys, statistics and magazine articles. 4 pp. 10c. (Apply to the Foundation, 130 E. 22d St., New York.)

### A Street Plan

After four years of study, developing the Thoroughfare Plan proposed in the City Plan for San Diego in 1926, the San Diego City Planning Commission presents "A Report on a Major Street Plan for the City of San Diego, Calif.," which "not only anticipates city-wide zoning but also serves as a structural framework for further parkway and harbor plans and for an effective system of subdivision control." 31 quarto pp., including several maps. (Apply to the Commission, Administration Bldg., Balboa Park, San Diego, Calif.)

### Welfare Agencies Listed

To answer the laymen's question, "What to do?" when asked to direct an applicant seeking relief, the Women's City Club of New York, with the assistance of The Welfare Council, has prepared a pocket-size booklet, "Welfare Agencies, City of New York—Where to Seek Help," which indicates the proper agency to be consulted for various types of problems, listed alphabetically. 14 pp. (Apply to the Club, 22 Park Ave., New York.)

### Billboards

A prize collection of views of the billboard monstrosities and cluttered filling-stations which line the roads leading to Washington, D. C., are presented in a 42-page booklet entitled "Highway Entrances to Washington—The Federal City." This survey was published by the American Nature Association for the American Civic Association and the National Council for the Protection of Roadside Beauty, and is similar to reports which have been prepared for several states. (Apply to the American Nature Association, 1214 Sixteenth St., Washington, D. C.)

### Art Commission Report

The report for the years 1928 and 1929 of the Art Commission of the City of New York contains an account of the action taken by the Commission on the 131 matters, involving an estimated cost of $77,000,000, submitted to it in 1928, and the 176 matters, involving an estimated cost of $98,300,000, submitted in 1929. 37 pp., including a number of illustrations. (Apply to the Art Commission, City Hall, New York.)

### Zoning Ordinances

"The Preparation of Zoning Ordinances" is the title of the latest addition to the service publications of the Department of Commerce, Bureau of Standards, Division of Building and Housing. The preliminary edition is in 60-page multigraphed form with 14 pages of appendices. The work is subtitled "A Guide for Municipal Officials and Others in the Arrangement of Provisions in Zoning Regulations." "It is designed to aid in a simple, logical, practical, and legally satisfactory arrangement of provisions in the ordinance, to promote uniformity in form and arrangement, and to point the way to economy of time in the drafting and use of such ordinances." (Apply to James S. Taylor, Chief, Division of Building and Housing, Department of Commerce, Washington, D. C.)

### Stabilized Employment

The report bearing this title, prepared at the request of Governor Roosevelt of New York by his Committee on Stabilization of Industry for the Prevention of Unemployment, now known as the Governor's Commission on Unemployment Problems for the State of New York, presents "a discussion of efforts made by industry to stabilize operations and analyze the problems involved in regularizing employment, particularly during periods of depression." Part One, consisting of 20 mimeographed pages, contains "a brief analysis of the causes of unemployment, a statement of the most hopeful means as yet developed by business of regularizing both production and employment, and a discussion of what should be done by industry and by government to ease the burden of unavoidable joblessness which must now be borne by the worker and his dependents." Part Two describes stabilizing and insurance practices used by certain American industries. Part One also contains specific references to organizations and industries whose experiences have a bearing on the problems considered. (Apply to the New York State Department of Labor, 124 E. 28th St., New York.)

### Planning Propaganda

The City Planning and Zoning Commissions of Roanoke, Va., as a part of a particularly well-conceived program for popularizing the city plan, has initiated a series of pamphlets, No. 1 of which is entitled "City Plan Paragraphs for Your Information." Outstanding accomplishments, and principal planning recommendations are presented in brief, together with inspirational quotations, and opinions of outstanding officials and editors about the Roanoke plan. 12 pp. (Apply to Edward L. Stone, Chairman, Roanoke, Va.)

### Building and Loan

The United States Building and Loan League, in the first edition of its *Annals*, just issued, presents the proceedings of its 42nd annual convention together with papers from state and group conventions. The publication has been undertaken "that all may profit and that the building and loan business throughout the country may more successfully meet the demands of the American people and furnish a more worthwhile service." 760 pp. $10. (Apply to Secretary-Treasurer, 22 E. 12th St., Cincinnati, O.)

### Problems of Municipalities

"New Jersey Municipalities—Their Problems and Policies" is the title given to the Proceedings of the Sixteenth Convention of the New Jersey State League of Municipalities and Allied Associations, which was held in Paterson September 25-26, 1930. Addresses by a number of authorities on municipal problems are included. 103 pp. $1.00. (Apply to the League, 34 W. State St., Trenton, N. J.)

## Other Reports Received

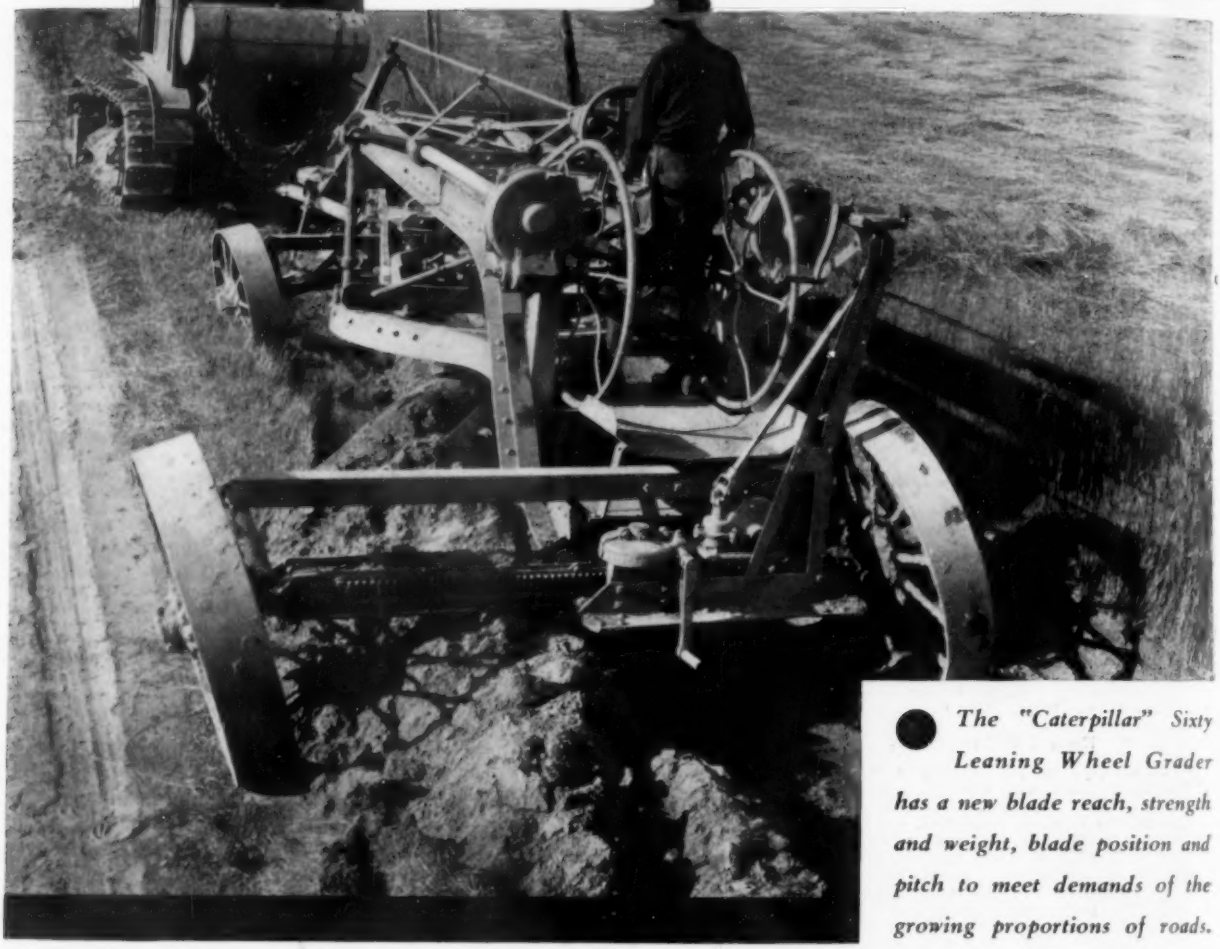
CAMDEN COUNTY, N. J.—Methods for Abatement of the Pollution of the Waters of Camden County. Reports of Sewer Survey Commission. 1930. 62 pp.

COOK COUNTY, ILL.—Annual Message of Anton J. Cermak, President, Board of Commissioners, for the fiscal year 1930. 66 pp.

MISSOURI.—Biennial Report, State Highway Commission, for the period ending December 1, 1930. 537 pp.

PASADENA, CALIF.—Annual Report, Water Department, 1929-1930. 60 pp.

# Just a few minutes to the CITY HALL



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# CONVENTIONS—WHEN AND WHERE

**(Figures in parentheses following the name of the convention city indicate the estimated attendance, other than local.)**

FEBRUARY 4-6.—MONTREAL, QUE.
*Engineering Institute of Canada. Annual meeting.* Secretary, R. J. Durley, 2050 Mansfield Street, Montreal, Que.

FEBRUARY 4-6.—PITTSBURGH, PA.
*National Paving Brick Manufacturers Association. Annual meeting.* Managing Director, G. F. Schlesinger, 1245 National Press Building, Washington, D. C.

FEBRUARY 5-7.—NASHVILLE, TENN. (125)
*American Water Works Association—Kentucky-Tennessee Section. Annual meeting.* Executive Secretary, F. C. Dugan, 532 West Main Street, Louisville, Ky.

FEBRUARY 5.—DANVILLE, VA.
*Virginia State Chamber of Commerce. Annual meeting.* Managing Director, LeRoy Hodges, 708 Grace-American Building, Richmond, Va.

FEBRUARY 11-13.—LAWRENCE, KANS. (400)
*Kansas Water Works Association. Annual meeting.* Secretary-Treasurer, E. A. Boyce, State Board of Health, Lawrence, Kans.

FEBRUARY 12.—BOSTON, MASS.
*Massachusetts Highway Association, Annual meeting.* Secretary, John M. McCarthy, 318 State House, Boston, Mass.

FEBRUARY 12-14.—MINNEAPOLIS, MINN. (50)
*Minnesota Association of Commercial Secretaries. Annual meeting.* Secretary, C. M. Smallwood, Worthington, Minn.

FEBRUARY 13-14.—COLUMBUS, OHIO
*Ohio Commercial Secretaries Association. Semi-annual meeting.* Secretary-Treasurer, Russell Frey, Lakewood, Ohio.

FEBRUARY 17.—NEW HAVEN, CONN. (100)
*Connecticut Society of Civil Engineers. Annual meeting.* Secretary, C. M. Blair, Box 235, New Haven, Conn.

FEBRUARY 17-18.—HARRISBURG, PA.
*Pennsylvania State Association of Boroughs. Annual convention.* Secretary, J. Herman Knisely, Bureau of Municipalities, Harrisburg, Pa.

FEBRUARY 18-20.—ATLANTIC CITY, N. J. (3,000)
*Association of Highway Officials of North Atlantic States. Annual convention.* Secretary-Treasurer, A. Lee Grover, Secretary of the State Highway Commission of New Jersey, Trenton, N. J.

FEBRUARY 18-20.—ANN ARBOR, MICH. (600)
*Conference on Highway Engineering—University of Michigan. Annual convention.* Secretary, R. E. Morrison, University of Michigan, Ann Arbor, Mich.

FEBRUARY 18-20.—ATLANTIC CITY, N. J. (110)
*New Jersey Mosquito Extermination Association. Annual convention.* Secretary, Dr. Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

FEBRUARY 21-26.—DETROIT, MICH. (10,000)
*National Education Association—Department of Superintendence. Annual meeting.* Executive Secretary, Sherwood D. Shankland, 1201 16th Street, N. W., Washington, D. C.

FEBRUARY 23-24.—CHICAGO, ILL. (75)
*American Concrete Pipe Association. Annual convention.* Secretary, M. W. Loving, 33 West Grand Avenue, Chicago, Ill.

FEBRUARY 24-26.—MILWAUKEE, WIS. (800)
*American Concrete Institute. Annual convention.* Secretary, Harvey Whipple, 2970 West Grand Boulevard, Detroit, Mich.

FEBRUARY 24-27.—WICHITA, KANS. (25,000)
*Southwest Road Show and School.* Manager, F. G. Wieland, Exposition Building, Water and William Streets, Wichita, Kans.

FEBRUARY 25-27.—TORONTO, ONT. (500)
*Ontario Good Roads Association. Annual convention.* Secretary, S. L. Squire, 98 Albany Avenue, Toronto, Ont.

MARCH 2.—HURON, S. DAK.
*South Dakota Commercial Secretaries' Association. Annual convention.* Secretary, G. R. McArthur, Huron, S. Dak.

MARCH 4-5.—PRINCE ALBERT, SASK.
*Saskatchewan Association of Rural Municipalities. Annual convention.* Secretary, J. J. McGurran, Nokomis, Sask.

MARCH 11-13.—WINDSOR, ONT. (300)
*American Water Works Association—Canadian Section. Annual meeting.* Secretary-Treasurer, A. U. Sanderson, Department of Public Works, City Hall, Toronto, Ont.

MARCH 12.—CHICAGO, ILL. (100)
*Midwest Safety Conference.* Manager, George G. Traver, Chicago Safety Council, 130 North Wells Street, Chicago, Ill.

MARCH 12.—CONCORD, N. H. (150)
*New Hampshire Good Roads Association. Annual meeting.* Secretary, Frank D. Sleeper, Laconia, N. H.

MARCH 20-21—TRENTON, N. J. (250)
*New Jersey Sewage Works Association. Annual convention.* Secretary, John R. Downes, Bound Brook, N. J.

APRIL 7-9.—COLUMBIA, S. C. (250)
*American Water Works Association—Southeastern Section. Annual meeting.* Secretary-Treasurer, W. H. Weir, 4 Capitol Square, S. W., Atlanta, Ga.

APRIL 9-10.—ANACONDA, MONT.
*American Water Works Association—Montana Section. Annual meeting.* Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 12-27.—MILAN, ITALY
*International Exhibition for the Safety of Highway Traffic.* Address: The Royal Automobile Club of Italy, Corso Venezia, 69, Milan, Italy.

APRIL 15.—NORFOLK, VA.
*American Society of Civil Engineers. Annual spring meeting.* Secretary, George T. Seabury, 33 West 39th St., New York.

APRIL 17.—PITTSBURGH, PA.
*Safety Engineering Conference.* Secretary, George E. Clarkson, Manager of the Western Pennsylvania Safety Council, 2409 First National Bank Building, Pittsburgh, Pa.

APRIL 20-23.—BIRMINGHAM, ALA.
*American Society of Mechanical Engineers. Semi-annual meeting.* Secretary, C. W. Rice, 29 West 39th Street, New York.

APRIL 20-21.—MARLIN, TEXAS. (5,000)
*East Texas Chamber of Commerce. Convention.* Secretary, Hubert M. Harrison, Longview, Texas.

APRIL 20-26.—MILAN, ITALY.
*International Congress of Sanitary Engineering and Municipal Hygiene. Second Congress.* General Secretary, Charles Rauch, Engineer, Piazza Del Duomo N. 17, Milan, Italy.

APRIL 21-24.—TORONTO, ONT.
*Building Officials' Conference. Annual meeting.* Secretary-Treasurer, Col. John W. Oehmann, Inspector of Buildings, District Building, Washington, D. C.

APRIL 23-24.—ROANOKE, VA. (125)
*Southern Commercial Secretaries' Association. Annual meeting.* Secretary-Treasurer, Karl Lehman, Orange County Chamber of Commerce, Orlando, Fla.

APRIL 28-MAY 1.—ATLANTIC CITY, N. J. (3,000)
*Chamber of Commerce of the United States of America. Annual meeting.* Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

APRIL 29-30.—BOSTON, MASS.
*Massachusetts Safety Conference.* Secretary, Lewis E. MacBrayne, 6 Beacon Street, Boston.

MAY 4-9.—WASHINGTON, D. C. (2,000)
*International Chamber of Commerce. Biennial Congress.* Manager of the American Section, John P. Gregg, Connecticut Avenue and H Street, N. W., Washington, D. C.

MAY 25-29.—PITTSBURGH, PA. (1,000)
*American Water Works Association. Annual convention.* Secretary, Beekman C. Little, 29 West 39th Street, New York.

JUNE 1-5.—BERLIN, GERMANY. (1,000)
*International Federation for Housing and Town Planning. Congress.* Organizing Secretary, H. Chapman, 25 Bedford Row, London, W. C. 1, England.

JUNE 1-5.—BERLIN, GERMANY. (1,000)
*International Housing Association. Congress.* General Secretary, Dr. Hans Kampfmeyer, Hansa Allee 27, Frankfurt am Main, Germany.

JUNE 3-5.—ASHEVILLE, N. C. (250)
*American Forestry Association. Annual meeting.* Executive Secretary, Ovid Butler, 1727 K Street, N. W., Washington, D. C.

JUNE 8-11.—TORONTO, ONT.
*National Association of Purchasing Agents. Annual Convention and Informashow.* Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

JUNE 21-22.—WISCONSIN RAPIDS, WIS.
*Wisconsin Association of Commercial Secretaries. Annual meeting.* Secretary-Treasurer, Lee I. Yorkson, Wausau, Wis.

JUNE 22-26.—ASHEVILLE, N. C. (550)
*American Institute of Electrical Engineers. Annual summer convention.* National Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

JUNE 22-23.—LAKE WORTH, FLA. (30)
*Florida Commercial Secretaries' Association. Annual convention.* Secretary-Treasurer, George F. Sampson, Winter Haven, Fla.

JUNE 23-26.—BOSTON, MASS.
*New England Association of Fire Chiefs. Annual convention.* Secretary-Treasurer, John W. O'Hearn, 99 Main Street, Watertown, 72, Mass.

JUNE 27-JULY 4.—LOS ANGELES, CALIF. (10,000)
*National Education Association of the United States. Annual meeting.* Secretary, J. W. Crabtree, 1201 16th Street, N. W., Washington, D. C.

AUGUST 18-20.—COUNCIL BLUFFS, IOWA.
*League of Iowa Municipalities. Annual meeting.* Secretary-Treasurer, Frank G. Pierce, Marshalltown, Iowa.

SEPTEMBER 24-26.—NEW YORK. (150)
*International Association of Public Works Officials. Annual convention.* Secretary, A. M. Anderson, 100 North LaSalle Street, Chicago, Ill.

SEPTEMBER 26-OCTOBER 2.—ATLANTIC CITY, N. J.
*American Electric Railway Association. Golden Anniversary convention.* General Secretary, Guy C. Hecker, 292 Madison Avenue, New York.

OCTOBER 7-10.—LOUISVILLE, KY. (250)
*International City Managers' Association. Annual convention.* Executive Secretary, Clarence E. Ridley, 923 East 60th Street, Chicago, Ill.

OCTOBER 12-13.—MONTEREY, CALIF. (150)
*California Sewage Works Association. Annual convention.* Secretary, Professor E. Reinke, Life Sciences Building, University of California, Berkeley, Calif.

OCTOBER 12-15.—ST. PETERSBURG, FLA. (400)
*International Association of Chiefs of Police. Annual convention.* Secretary, George Black, Chief of Police, Wilmington, Del.

OCTOBER 12, WEEK OF.—CHICAGO, ILL. (7,000)
*National Safety Council. Annual Congress.* Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 14-17.—HAVANA, CUBA. (1,200)
*International Association of Fire Chiefs. Annual convention.* Secretary, James J. Mulcahey, Fire Chief, Yonkers, N. Y.

OCTOBER 18-21.—TOLEDO, OHIO. (325)
*National Association of Commercial Organization Secretaries. Annual convention.* Secretary-Treasurer, Gerrish Gassaway, Chamber of Commerce, Wilmington, Del.

OCTOBER 19-23.—PITTSBURGH, PA. (200)
*American Society of Municipal Engineers. Annual convention.* Secretary, C. W. S. Sammelman, 4359 Lindell Boulevard, St. Louis, Mo.

NOVEMBER 2-4.—GREENSBORO, N. C.
*American Water Works Association—North Carolina Section. North Carolina Sewage Works Association. Joint annual meeting.* Secretary, H. G. Baity, University of North Carolina, Chapel Hill, N. C.

**For details of the two important international housing and town planning congresses convening in Berlin in June, and the study tour including attendance at them, see page 94.**

# the BEST ANSWER to your ICE REMOVAL PROBLEM!

Providing traction and safe means of travel on icy, slippery streets is fully as important in winter road maintenance as snow removal. Out of the constant fight to reduce "skidding accidents," has come a proved method of providing constant traction.

Sand, gravel, cinders or coke breeze, moistened with a solution of Calcium Chloride will melt ice at the point of contact with the road surface. When the ice melts the solution is reduced in strength and refreezes, firmly holding each particle in the icy surface against the action of wind or traffic.

Many communities place piles of treated cinders, coke, sand or gravel near treacherous points such as hills and sharp curves. Here they are always handy for spreading when the occasion demands. A few extra shovels full of Calcium Chloride mixed with these materials at the time of application will increase their efficiency.

## Handling "Quick Freezing" Emergencies

Snow and ice melted to water by the sun in the daytime often becomes a glare of ice after sundown. For this emergency some localities take their two-wheeled spreaders, towed by trucks and spread a mixture of Calcium Chloride and sand over the slippery stretches. Using sand the truck can be moved along fairly fast. As the sand hits the ice it digs in and gives immediate traction.

For an accumulation of heavy ice and where drains are frozen up, Calcium Chloride can be dumped directly on the ice and will melt it in a short time even in temperatures much below zero.

If you are not using Calcium Chloride for winter traction and ice removal, why not try it yet this season. Send this coupon for latest information and prices to any one of the member companies listed below.

**Calcium Chloride Publicity Committee**

**Solvay Sales Corporation, 61 Broadway, New York City**
**The Columbia Products Company, Barberton, Ohio**
**The Dow Chemical Company, Midland, Michigan**

Without obligation please send literature on ice removal and quote prices on_____tons of Calcium Chloride.

Name _____

Position _____

Address _____

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CHLORIDE

# NEWS AND ILLUSTRATIONS

**Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings**

## A Wheel-mounted Snow Loader

A wheel-mounted snow-loading machine having a traction speed of 8¾ miles per hour with three speeds forward and two reverse has been developed by George Haiss Manufacturing Co., Inc., 141st Street and Park Avenue, New York.

This Haiss wheel snow loader, Model 31, was designed so that it could be moved more quickly than the Haiss crawler-driven snow loader from one part of the city to another. It has a loading capacity of 7½ yards per minute. The power chassis is a Case tractor mounted on heavy rubber-tired wheels, the rear wheels being 40 x 10 inches and the front wheels 24 x 5 inches. The motor is 4-cylinder with 3⅞ x 5½-inch bore. The take-off box is inserted between the rear end of the tractor and the engine to drive the elevator at a speed of 160 feet per minute.

The crowding speed of 35 feet per minute is accomplished by means of the Haiss worm, which can be engaged or disengaged at will. When the crowding speed is in operation, the differential action of the rear axle is cut off in a novel manner by means of a jaw clutch locking device so that there will be no slippage of the wheels.

The snow boom is similar to that used on the crawler-mounted loader, but the flights are 24 inches wide instead of 30 inches. The operator can raise and lower the elevator by means of a hand wheel, and he can either stand or sit on the operator's platform and steer the machine from that position.

The over-all length of the machine is 23 feet 7 inches, the height 12 feet 5 inches, and the collapsed height 9 feet. The reach is 7 feet, clearance for trucks 9 feet, over clean-up scraper 9 feet 5 inches, and the wheelbase 6 feet 9⅝ inches. The weight of the loader complete is 15,500 pounds.

THE HAISS WHEEL-MOUNTED SNOW LOADER

EXTERIOR OF THE 1931 PEERLESS FIRE-ALARM BOX, SHOWING THE WHITE STRIPE TO INCREASE VISIBILITY

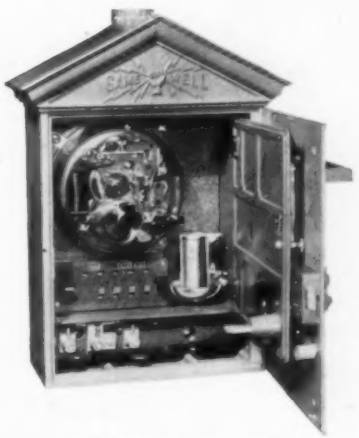
## A New Model Fire-Alarm Box

The new 1931 model Peerless fire-alarm box, manufactured by The Gamewell Company, Newton, Mass., permits a full alarm to be received from any one box despite circuit troubles, such as an open circuit, a grounded circuit, a box short-circuited and the entire circuit shunted out, the circuit opened and grounded, the circuit open and a box short-circuited, and the circuit open and the entire circuit shunted out.

In addition to these remarkable features, it permits full alarms to be received from all boxes except those between "troubles" under such complicated conditions as an open circuit in two or more places, a circuit grounded in two or more places, and a circuit open in one place and grounded at another.

The 1931 Peerless fire-alarm box is not disabled by a defective non-interference magnet. It operates at an abnormally low line current, has standard Peerless non-interference and succession, has a rugged and convenient terminal block, has a break-wheel interchangeable with previous Peerless boxes, has extended succession, and the standard quick-action door outer shell, and accomplishes everything which the earlier model will do. The Gamewell Company offers this major improvement in fire-alarm boxes believing that it will bring to fire-alarm men the realization of the long-felt need of protection against loss of alarms from broken or grounded circuits.

Quick-action doors, which have been featured on Gamewell fire-alarm boxes for many years, are included in the new model.




INTERIOR OF THE BOX

## Ball Bearings Improve Sewer-Cleaning Machines

Greater efficiency and durability have been secured in Turbine sewer machines through the use of special improved type ball bearings, according to an announcement of the Turbine Sewer Machine Co., 5210 State Street, Milwaukee, Wis. Through the cooperation of a well-known bearing manufacturer, the Turbine Sewer Machine Co. has secured a special bearing constructed of the finest tool steel and machined to the closest limits. It uses only the highest quality spherical ball bearings, so constructed that they can be greased at the plant when installed.

This type of bearing runs more easily, has longer wearing qualities and will remain lubricated for the life of the equipment. Although this bearing is to cost five times as much as the type previously used, it is believed that the customer will reap the benefit in trouble-free service, as the bearing should never have to be replaced.

# FOR 1931:

***made possible by 1930 performance***

# $50 TO $600
# PRICE REDUCTIONS
# *on*
# GENERAL MOTORS
# TRUCKS

**500 lbs. to 3,500 lbs.**

**GUARANTEED CAPACITY INCREASES**
**STRAIGHT RATING**
**ON 10 GREAT MODELS, 133 DIFFERENT TYPES**

MODEL T-15: *Price reduced $50; straight rating capacity increased 1,100 lbs.—now ¾-ton and 1-ton range . . . 130" and 141" wheelbases, 10 different types available . . .*

***Now* $645**
(TYPE 1501)

MODEL T-17: *Price reduced $70; 1-ton range . . . 130" and 141" wheelbases, 8 different types available — 7½' and 9' body lengths . . .*

***Now* $675**
(TYPE 1703)

PRICE reductions or capacity increases—*or both!*—bring higher value than ever, in 10 great General Motors Truck models: affecting 133 different types of modern haulage and delivery equipment. These increased capacities mean increases of 20% to 35% in the volume of work which these models are capable of handling under factory guarantee. They are the result of the performance records of these trucks in actual service.

The price reductions, likewise, are made possible by what happened in 1930. Lowered material costs were coupled with production savings. And it is a General Motors Truck policy to share such advantages with truck owners. So, more than ever, it's going to pay every truck owner to find out what General Motors Truck offers *before* he buys! See these trucks today. Try them out.

*(All prices: Chassis, f. o. b Pontiac, Mich.)*

**A GENERAL MOTORS VALUE!**

MODEL T-19: *Price reduced $150; 1½-ton range . . . 130", 141" and 152" wheelbases—22 different types available—7½', 9' and 10½' body lengths . . .*

***Now* $745**
(TYPE 2201)

MODEL T-90 (*six wheeler*): *Price reduced $600; 5-7½-ton range . . 185¼", 201" and 220" wheelbases, 7 different types available . . . Brown - Lipe over - and - under drive auxiliary with 4-speed main transmission standard (12 speeds forward, 3 reverse).*

***Now* $5285**
(TYPE 9001)

GENERAL MOTORS TRUCK COMPANY, Pontiac, Mich. (*Subsidiary of* Yellow Truck & Coach Mfg. Co.)
GENERAL MOTORS TRUCKS, YELLOW CABS and COACHES
Factory Branches, Distributors, Dealers—in over 2000 principal cities and towns
(*Time payments financed through* Yellow Manufacturing Acceptance Corporation *plan, at lowest available rates*)

### The Chicago Testing Laboratory, Inc.

The Chicago Paving Laboratory, Inc., 536 Lake Shore Drive, Chicago, Ill. (Hugh W. Skidmore and Gene Abson, Directors), has been in business for more than twenty years. For a long time the organization has been frequently addressed and referred to as the Chicago Testing Laboratory. For this reason, in addition to recognizing that the older name fails to fully describe the extent of its services, the organization has decided to use the latter, broader name, which will be maintained in company with the older one. One institution under both names, with the same directors, officers, personnel, equipment and location, now offers its services, including consultation, investigation, reports, specifications, design, physical and chemical testing, research, concrete and bituminous technology, laboratory plant and job inspection of pavements, structures and works, materials, processes and products, and petroleum technology.

### Boring Horizontal Holes Under Pavements

A new device known as the Hydrauger has been announced by the Hydrauger Corporation, Ltd., 1298 Bryant Street, San Francisco, Calif., which, it is claimed, will drill horizontally under a street or highway and accurately control the direction of the bore. These machines bore a straight, clean hole through the soil and, in over 90 per cent of cases, at distances of 40 feet the auger has come out within 2 or 3 inches of the spot at which it was aimed.

Model 2-A of this machine in actual operation has drilled under a 45-foot street in 18 minutes, and under a 90-foot street in 40 minutes, including the time required to add boring-bar extensions. It eliminates the necessity for tearing up pavements or gardens, except for two relatively small pits, one to receive the machine, and the other at the end of the bore.

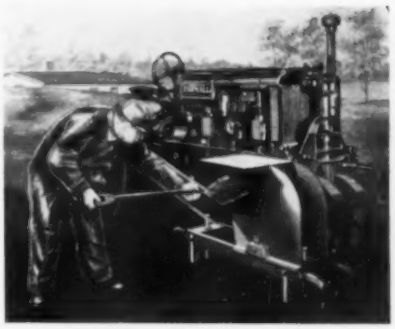
The Hydrauger is driven by compressed air and is connected with running water which passes through the boring-bar, issuing in two streams at the auger. The water washes the borings back, acting as a lubricant, and leaves a clean, straight hole. So little water is used that it can be obtained by connection with an ordinary domestic faucet or a fire hydrant with as low a pressure as 30 pounds. Where no piped water is available, the water may be transported in a barrel and circulated by means of a small air-driven pump.

Feed ahead is accomplished by a simple and strong reversible ratchet. After boring is completed, the permanent pipe may be pushed in by hand, or the machine ratchet may be used to pull in either the permanent pipe or a cable. A swivel is furnished with each machine for this purpose.

### A New Top-Soil Dresser

A new compost mixing machine and a top-soil dresser for use in the preparation of soil and maintenance of turf for golf courses, cemeteries, parks and estates, has been announced by The Beardsley & Piper Co., 2543 North Keeler Avenue, Chicago, Ill.

The new Soilslinger compost mixing machine thoroughly cuts, breaks, mixes and aerates a compost, completely pulverizes and prepares soil, sand and manure, and delivers a blended material into a fluffy pile or windrow. This unit is simply constructed, possessing a specially designed cutting cylinder to insure proper mixing and aerating of materials. It is made with a pulley for tractor drive or with a gasoline engine or electric motor. While the Soilslinger will meet all capacity requirements, it is particularly applicable because of its low cost



THE TRACTOR-DRIVEN SOILSLINGER

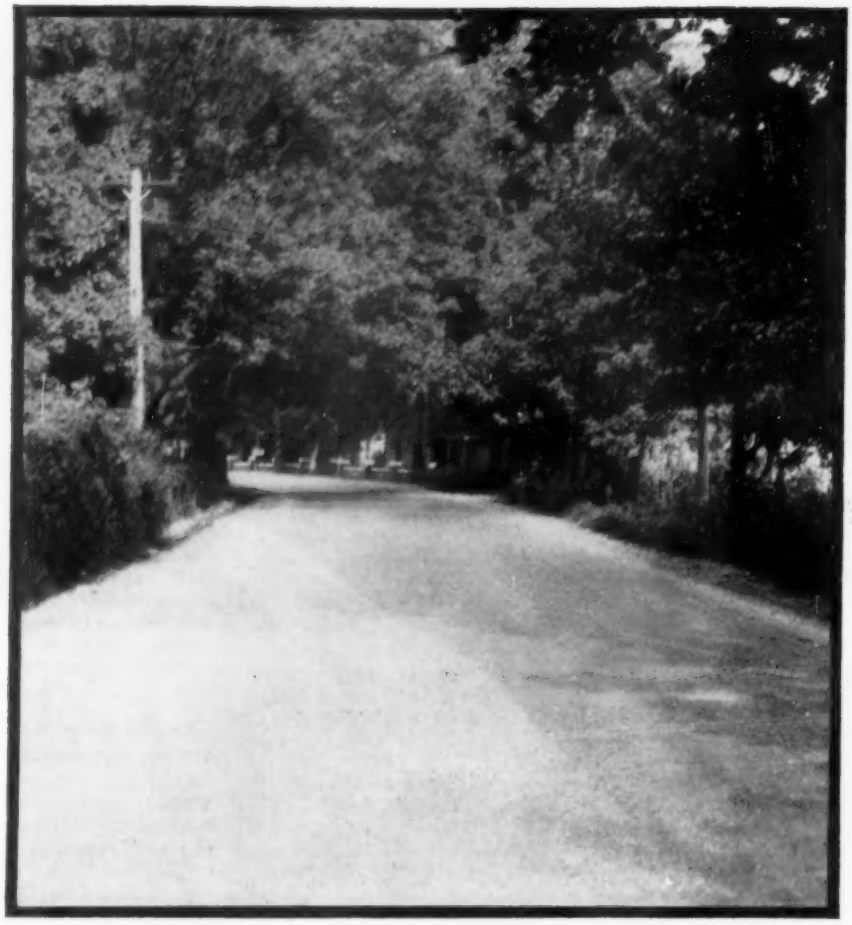
for use on smaller golf courses and parks where only one or two men are employed for turf maintenance.

The new Soilspreader top-soil dresser is also of simple construction and low in cost. It is designed for use in spreading top-soil dressings on greens and turfs. Its special features include adjustments for light or heavy feed of top soil, even distribution of material, and wheel clutches that make for positive discharge of the top dressing only when and where wanted.

### Murphy Now Manager of F-M Stationary Diesel Engine Sales

Fairbanks, Morse & Co., 900 South Wabash Avenue, Chicago, Ill., has announced the appointment of C. B. Murphy as Manager of the stationary diesel engine sales, with headquarters in Chicago. Mr. Murphy became, in 1913, a general line salesman in the Florida west coast territory, and since the introduction of the F-M diesel in 1915 he has devoted his time to that product. In 1924 he was transferred to the executive offices as Assistant to the Manager of the Diesel Engine Division and in 1929 was transferred to Washington.

BORING UNDER A WIDE STREET WITH A HYDRAUGER



**Right**

*Kentucky* — State Route No. 33, Carroll Co. Bitumuls Retread.

**Below**

*Illinois* — City of Glencoe. Bitumuls pavement.

**Below**

*Idaho* — Lewiston-Spalding Road. Constructing ten miles of Bitumuls Road-Mix. Blading to center windrow prior to spreading.

# BIT-U-MULS

## THE MODERN WAY TO USE ASPHALT

*for*

**DURABLE WEARING SURFACE**

•

**ARMOR COAT**

•

**FULL PENETRATION PAVEMENT**

•

**RETREAD and ROAD MIX**

•

**MAINTENANCE**

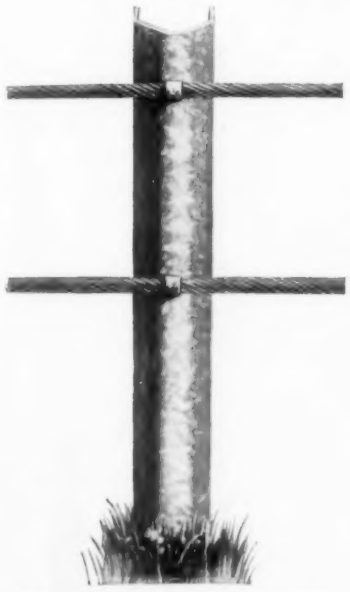
For primary roads or city streets, for low-cost secondary roads, for widening, resurfacing and maintenance . . . investigate Bitumuls, if you're interested in more mileage for less money. Bitumuls gives a smooth, permanently non-skid texture. No bleeding, shoving or corrugating. Economically constructed with simple equipment . . . no heating. Write for a set of Bitumuls Bulletins, with complete facts. *American Bitumuls Company, Dept 4, 200 Bush St., San Francisco.*

***Factories and Offices:*** BOSTON, BALTIMORE, CINCINNATI, ST. LOUIS, BATON ROUGE, LOS ANGELES, PORTLAND, ORE. ***Executive Offices:*** SAN FRANCISCO

## Hot Galvanized Guard Posts for Highways

Recent investigations and actual experiments with highway guard posts have proved to engineers that strength and shock-absorbing qualities are most important factors in these installations. The Truscon steel post made by Truscon Steel Co., Youngstown, Ohio, is made of ⅛-inch special steel heavily galvanized after fabrication. The heavy steel hook wedge connection securely holds the wire cable at each post. The pressure of the hook on the cable is such that the shock is gradually taken up along the entire section. Heavy anchors attached to a deadman give support at each end of the section and help absorb any shocks.

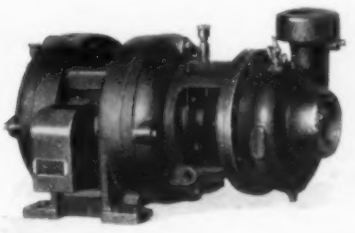
The front of the post is rounded and the sides run back at an angle so that if hit by the hub the car will glance off. The cable placed out in front of the post tends to keep a vehicle from actually hitting the post and resulting in dead impact as in many guard posts. These posts are made of ⅛-inch special steel, 7¼ inches wide and 6 feet long, and weigh 33 pounds each. The posts are shipped with hook and wedge connections for holding the longitudinal members securely in place.



THE NEW TRUSCON GALVANIZED HIGHWAY GUARD POST

The posts are so constructed that they will nest readily, thereby taking up little space on a truck or in a warehouse. They are easily handled and may be set in concrete or in earth footings. Where the ground is free from large stones, the posts may be driven in, thus saving the expense of digging holes. The cable is quickly attached by the hook wedge connection. No holes are drilled in the posts and there are no nuts to tighten.

The relative permanence of this post is assured both through the heavy steel sections used and through the heavy coating of zinc acquired by hot-galvanizing all parts.



ALLIS-CHALMERS TYPE SSU PUMPING UNIT

## Three New Sizes of Allis-Chalmers Pumps

An extension to cover three new sizes in the Allis-Chalmers line of SSU centrifugal pumping units of single-shaft, two-bearing design, which now includes ratings from 30 to 500 gallons per minute for heads under 100 feet, has been announced by the Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

Recent adoption of total enclosure of motor housings on the pump end of these units and the use of totally enclosed fan-cooled motors, if necessary, permit their use for severe service conditions.

They are adapted for use in water supply, circulation of water, oil or brine for heating or cooling systems, for the transfer of many liquids, air conditioning, garden or lawn watering, drainage systems, swimming pools, house service, and auxiliary service to power equipment for cooling water and seals.

## A New Convertible Power Shovel

A convertible power shovel that is full-revolving and full-crawler mounted and is equipped with all standard excavating buckets and attachments has been announced by the Keystone Driller Co., Beaver Falls, Pa. It is known as the 1931 Keystone Model-17 machine and weighs 28 tons complete with skimmer, pull-scoop or clamshell, and 30 tons with the standard bank shovel. While offered as a general-purpose one-yard revolving machine, it has been designed to give exceptional efficiency with the skimmer scoop for street and highway excavation, and with the pull-scoop or back hoe bucket in ditching.

Stability has been achieved by mounting the machine on a very large roller path 71 inches in diameter with hold-down shoes which tie the upper structure to the crawlers. This reduces the tendency to oscillation and makes it possible to accurately control and finish the grade with the skimmer bucket. The 21-foot boom provides a horizontal crowding movement of 14 feet 9 inches, so that the bucket can readily be filled in a 4- or 6-inch cut in one crowd. This adapts it for grading streets and for shallow excavation where the standard shovel would be at a serious disadvantage. Since the machine will excavate over a radius of 28 feet 6 inches, it is possible to cut and finish a grade from curb to curb in a street 50 feet wide by one set-up.

It is claimed that the one-yard bucket gives the machine a capacity of over 800 cubic yards per 10-hour day in any ordinary excavation, and the full-revolving feature makes it possible to handle deep cuts to advantage, loading the bucket in front of the machine and dumping it at the rear.

A full range of pull-scoop buckets from 24 to 72 inches is available on this unit. Sizes from 24 to 48 inches are standard and have capacities from ½-yard to 1 yard over this range. Three other size buckets are available, 54-inch, 60-inch and 72-inch, which will be found satisfactory and profitable where work is required in these widths, and with a little care may be readily handled by the same machine. The shovel has a digging depth capacity of 20 feet and an extreme depth reach of 24 feet, and an extreme reach at ground level of 25 feet 6 inches from the center pin. The dumping height of the ditcher bucket is 11 feet, and the dumping clearance with the skimmer bucket is 15 feet.

The boom and digging buckets for the skimmer-pull-scoop operation are exceptionally light. The boom weighs 2,500 pounds and the 1-yard skimmer or 48-inch ditcher with attachments about the same. Thus the dead load on the front of the machine is about 5,000 pounds or about one-half the weight ordinarily found in boom and bucket on a machine of the same capacity. This makes it possible with a moderate amount of counterweight to keep the rear end clearance or tail swing of the machine within the limit of 8 feet 6 inches from the center pin.

The power unit is a Climax Blue Streak engine developing 83 horsepower at 960 r.p.m. The traction speed is 75 feet per minute and the rotation speed 5¼ revolutions per minute. The gas consumption is about 45 gallons per 10-hour day, and the yardage output 800 cubic yards per day in ordinary formations with the regular buckets.

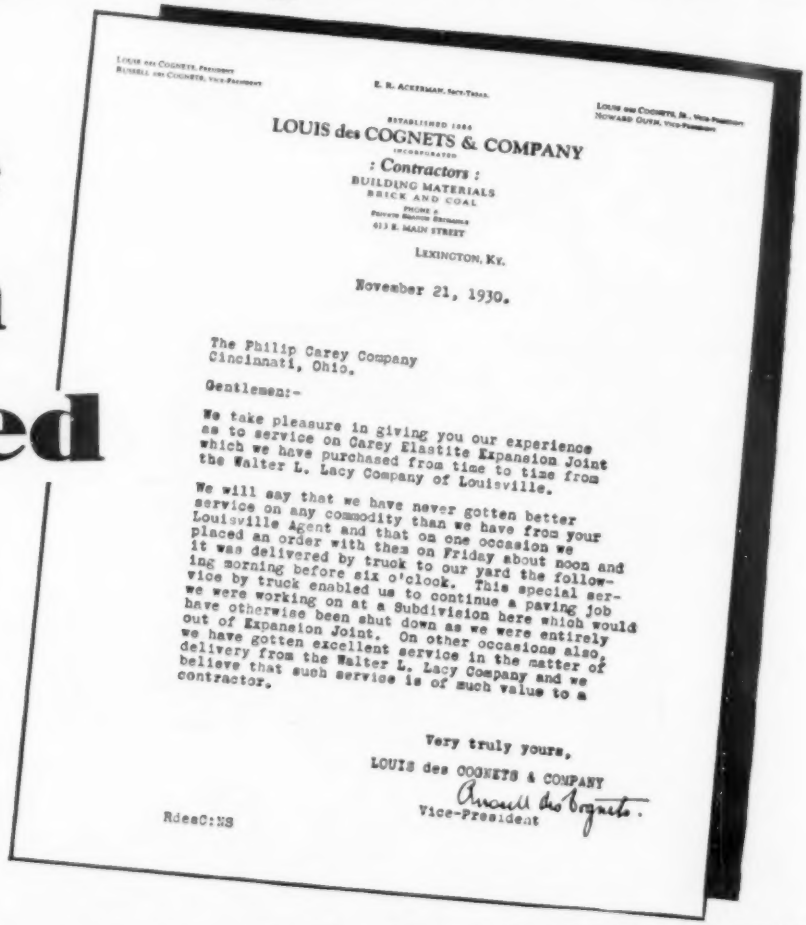
A MODEL-17 1-YARD KEYSTONE WHIRLER EQUIPPED WITH A 1-YARD SKIMMER BUCKET

# Carey Elastite Expansion Joint

REG. U.S. PAT. OFF.

TRADE MARK REG'D. U.S. PATENT OFFICE

## —there when needed



LOUIS des COGNETS & COMPANY
INCORPORATED
: Contractors :
BUILDING MATERIALS
BRICK AND COAL
613 E. MAIN STREET
LEXINGTON, KY.

November 21, 1930.

The Philip Carey Company
Cincinnati, Ohio.

Gentlemen:-

We take pleasure in giving you our experience as to service on Carey Elastite Expansion Joint which we have purchased from time to time from the Walter L. Lacy Company of Louisville.

We will say that we have never gotten better service on any commodity than we have from your Louisville Agent and that on one occasion we placed an order with them on Friday about noon and it was delivered by truck to our yard the following morning before six o'clock. This special service by truck enabled us to continue a paving job we were working on at a Subdivision here which would have otherwise been shut down as we were entirely out of Expansion Joint. On other occasions also, we have gotten excellent service in the matter of delivery from the Walter L. Lacy Company and we believe that such service is of much value to a contractor.

Very truly yours,
LOUIS des COGNETS & COMPANY
Russell des Cognets
Vice-President

RdesC:HS

**When the pavement is ready to pour, the Expansion Joint *must* be on the job. For almost 20 years Carey has been giving dependable service to road builders. Stocks of Carey Elastite Expansion Joint - - the felt side joint - - are carried in all shipping centers; and any order can be delivered without delay.**

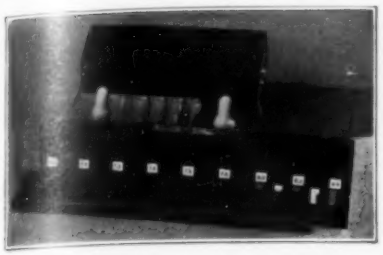
**If you have not ordered Elastite for your Spring requirements, we suggest you do so. Write for 1931 price list and trade discounts.**

**THE PHILIP CAREY COMPANY x Lockland, Cincinnati, Ohio**
**Branches in Principal Cities**

BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

Carey PRODUCTS EST. 1873

HEAT INSULATIONS
ASBESTOS MATERIALS
CAREYSTONE CORRUGATED SIDING
ASFALTSLATE SHINGLES
BUILDING PAPERS



THE TAYLOR SLIDE COMPARATOR

## New pH Equipment

As a result of the long and varied experience of their entire organization with pH control equipment and methods, W. A. Taylor & Company, 872 Linden Avenue, Baltimore, Md., have developed the new Slide Comparator. This instrument is unique in design and construction. Being molded from Bakelite, it is durable, precise, convenient and simple.

The Slide Comparator consists of two principal parts, the slide and the base. The slide is a Bakelite case 10 inches long, 2¾ inches high and ⅝-inch thick. It contains 17 vertical holes and 17 horizontal slots which pass through the exact centers of the holes. In these holes are placed the 9 color standards for any given indicator and 8 ampoules of distilled water. All these ampoules are held in place by a lid which is screwed on the top of the slide.

The base consists of two parts. The lower part contains a slot in which the slide may be moved back and forth, two holes containing vials of indicator solution, five holes containing test tubes, and a closed compartment for a ground-glass plate. Vertical slots run through the three central holes in the base holding the test tubes, these slots corresponding exactly with any three of the slots in the slide. The ground glass is contained in a closed compartment directly behind the three slots in the base. The upper part of the base serves as a cover for the vials and test tubes when the set is not in use. It is fastened to the lower part by means of spring catches.

In making determinations, the top is removed from the base, three of the test tubes are filled to the mark, 5 cc., with the sample to be tested, and placed in the three holes back of the slots in the base. To the central tube 0.5-cc. of the indicator solution is added by means of the pipette and nipple, and the contents are thoroughly mixed. The slide containing the color standards is now placed in position on the base and, the instrument being held toward a window or other source of daylight, the slide is moved back and forth in front of the test samples until a color match is obtained. The pH is then read off directly from the values on the front of the slide.

The Slide Comparator is unaffected by water, acids or alkalis. It therefore will not warp or come apart. Molding also gives it a machined precision that is impossible with wood or sheet metal.

Since the color standards are enclosed in a Bakelite case, there are no loose standards to be inserted and removed in making pH determinations. Thus all chance of loss or breakage from handling individual standards is eliminated. All color standards and test tubes are 11.5 mm. outside diameter. This makes the set small and compact and therefore readily portable. Of far greater practical importance, however, is the fact that the resulting thinness of layer of material being tested enables one to make accurate determinations on far more highly colored and turbid materials, without dilution, than is possible with larger tubes.

The fact that determinations are made simply by sliding the color standards in front of the test sample until a color match is obtained, makes the operation of the set extremely simple, so that it is possible to teach a workman to use the set accurately with a few minutes instruction.

Slide Comparators are supplied to cover the pH range 0.2-13.6. Each comparator covers a range of 1.6 pH units, the standards being in intervals of 0.2 pH.

The Long Range Slide Comparator was designed to meet the need of those workers who require a portable set covering a wide pH range. This set is made in five models (T-3, T-4, T-5, T-6 and T-7) to cover the range of any 3, 4, 5, 6 or 7 indicators respectively between the limits of pH 0.2 and 13.6, the number after T indicating the number of indicators included in the set.

Each Long Range Slide Comparator contains one complete Slide Comparator; 2 to 6 extra color standard slides; vials of the corresponding indicator solutions, with pipettes and nipples; and a supply of 5-cc. test tubes. This equipment is contained in a portable case 11 inches long, 9½ inches wide and 4½ inches high.

## Sites Joins Hydraulic Development Corporation

Kenneth G. Sites has joined the sales organization of the Hydraulic Development Corporation, 50 Church Street, New York, and will sell Hydro-Tite in New York, New Jersey and Pennsylvania. Mr. Sites will work out of the main sales office in New York.

## A New Dial-Scale Weigh-Hopper for a Bucket Loader

A new dial-scale weigh-hopper that will weigh within 0.4 of 1 per cent even while the bucket loader on which it is mounted is operating at an angle of 4 degrees, has been announced by the Barber-Greene Co., Aurora, Ill. This weigh-hopper is used with the newly announced Model-62 super bucket loader, a crawler-mounted, self-feeding, one-man-operated machine with a capacity of 62 cubic feet per minute.

The weighing unit built into this hopper is an American Kron scale. The dial on the scale is graduated into 2-pound units and is provided with two markers which may be set to indicate the desired reading. Directly above the weigh-hopper is a small auxiliary hopper holding approximately 360 pounds of material. At the top of the weigh-hopper itself is a sliding horizontal gate controlled from the operator's platform by a chain. When the indicator hand on the dial scale is near the desired weight, the sliding horizontal scale is closed, allowing the auxiliary hopper to fill up. By working the sliding gate with the chain, the material is allowed to feed from the auxiliary hopper into the weigh-hopper until the required batch is present.

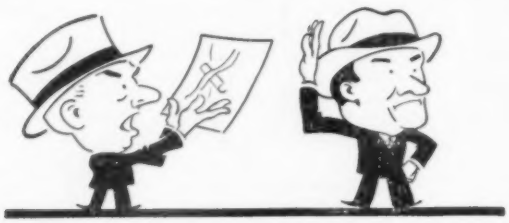
The weigh-hopper will weigh batches up to 3,600 pounds, not to exceed 32 cubic feet in volume.

The loader on which this weigh-hopper is mounted is equipped with the standard overload release sprocket for protection to the machine against strains due to an overload on the bucket line, and an overload release sprocket on the crawler drive to protect the machinery there. It feeds itself by means of two 42-inch discs that lie flat on the ground and revolve inward, crowding the material into the buckets. An adjustable scraper directly behind the feeding discs clears a path 7 feet 6 inches wide, the over-all width of the machine. The capacity of the loader is 62 cubic feet per minute.

## Lippman Representing Kyrock in New York and New England

M. A. Lippman, former instructor in civil engineering at the Polytechnic Institute of Brooklyn, N. Y., has recently been appointed representative for the Kentucky Rock Asphalt Co., Louisville, Ky., in charge of the New York, New Jersey and New England territory. Mr. Lippman has established offices at 11 West 42nd Street, New York.

THE NEW BARBER-GREENE DIAL-SCALE WEIGH-HOPPER ON A MODEL-62 SUPER BUCKET LOADER



# Culvert Theory vs. Practical Problems

THEORY shows on paper how long a culvert *should* last. But when the culvert goes into the ground where it must combat the destructive forces of soil, water, weather, erosion and shifting earth, it is then that nature upsets the best theories in the world.

On the evidence of twenty years service in the ground, we find that GOHI Corrugated Culverts successfully solve all the practical problems that arise in modern road drainage.

They are the simplest and easiest type to install and, when in the ground, are free from weaknesses that frequently develop with other types. Because of their flexibility, freezing water, settling fills, or the vibration of traffic, can't crack them. Neither will they break, nor will the joints pull apart because of movement of earth due to frost action.

GOHI durability is a fully demonstrated fact. Culverts that have been giving 100% service for more than 20 years are practically perfect today, due to the rust-resisting qualities of the *pure iron-copper alloy* base metal from which they are fabricated.

The deeper you go into the culvert proposition, the stronger will become your conviction that GOHI Corrugated Culverts best meet practical conditions and give lowest-cost-per-year service.

Write today to any one of the GOHI Fabricators below. He will give you complete details and technical service on any installation.

**Specify GOHI Culverts by name**

GENUINE OPEN HEARTH IRON — GOHI — PURE IRON - COPPER ALLOY — TRADE MARK

## Corrugated Culverts

**Guaranteed 99.90% Pure Iron-Copper Alloy**

**GOHI CULVERT MANUFACTURERS, Inc.**
**NEWPORT, KY.**

**Lincoln Steel and Forge Co.**
St. Louis, Mo.

**The Newport Culvert Co.**
Newport, Ky.

**The Pennsylvania Culvert Co.**
Philadelphia, Pa.

**Denver Steel & Iron Works Co.**
Denver, Colo.

**A. N. Eaton, Metal Products**
Omaha, Nebr.

**Feenaughty Machinery Co.**
Portland, Oregon

**Tennison Brothers**
Texarkana, Ark.

**Capital City Culvert Co.**
Madison, Wis.

**Central Culvert Co.**
Ottumwa, Iowa

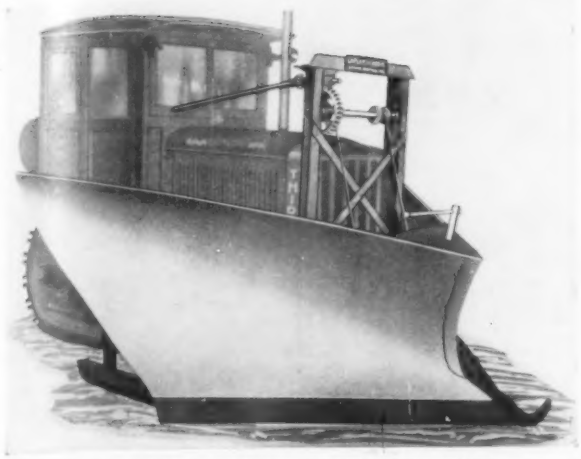
**Roanoke Sales Corp.**
Roanoke, Va.

**St. Paul Corrugating Co.**
St. Paul, Minn.

**Tennison Brothers**
Oklahoma City, Okla.

**Left—A Practical Problem Solved: Replacing rigid type with GOHI Corrugated Culvert, on Dixie Highway, north of Falmouth, Ky.** (GOHI Culverts meet copper-bearing pure iron requirements in all accepted specifications for corrugated metal culverts.)

© 1931, G. C. M., Inc.



THE MODEL LDSV-30 LIGHT-DUTY HAND-OPERATED PLOW FOR A CATERPILLAR THIRTY TRACTOR

## A Light-Duty, Hand-Operated Snow-Plow

Two new types of light-duty hand-operated snow-plows, built for use with or without sidewings and for mounting on Caterpillar Twenty and Thirty tractors, have been announced by the LaPlant-Choate Manufacturing Co., Cedar Rapids, Iowa. There has been considerable need for this type of plow in the snow-removal equipment field, and these units have been built with characteristic ruggedness and simplicity for their seasonal service.

The plows have been designed with the scaffold mounted on the front of the tractor. A winding wheel is provided inside the tractor cab, giving the operator instant access to it, and allowing him to raise and lower the V-nose without stopping or slowing down. The push point is located at the center of the track on the tractor, thus giving it the full benefit of the center pivot mounting. A worm gear has been provided so that the operator will not tire from raising and lowering the blade.

When provided with side wings for pushing the snow back over the banks, the wings rest on the side runners and are supported at the top by an upright steel tube on which the wing slides up and down. The wings are raised or lowered by means of a high-speed, hand-operated chain hoist which can be reached by the tractor operator by leaning out of the cab. They are braced at the rear by a telescoping, double brace system, making it possible to set the wings at any angle desired. The braces are in turn fastened to a drawbar which is bolted directly to the tractor drawbar plate and braced thereto. The drawbar is supplied with a jaw so that a tractor drawbar is available for pulling stalled cars, trucks, etc.

These light-duty plows are supplied with a worm and screw adjustment at the front of the V for raising and lowering the center runner. The plows are pushed from a connecting point at the front end of the V, while the rear or heel of the V is allowed to float up and down to adjust itself to the contour of the road, making it a full-floating plow which rides flat on the ground at all times. The scaffold is bolted securely to the front radiator and braced from the radiator back onto the tractor frame.

These Model LDSV-20 and LDSV-30 plows are 32 inches high at the V in front and 52 inches high at the V in the rear. The cutting width of the V is 9 feet 7 inches, and the width of the V at the top 11 feet 2 inches. The cutting edge is made of ½-inch x 6-inch crucible steel. The LDSV-20 weighs 2,600 pounds without wings and 3,080 pounds with wings, while the LDSV-30 weighs 2,700 pounds without wings and 3,180 pounds with wings. The height to the top of the wing, with the wing up, is 57 inches and to the bottom of the wing 29¼ inches. The width over-all with wings spread is 15 feet 4 inches, and with wings folded is 11 feet 6¼ inches. The length over-all of the LDSV-20 is 14 feet 10 inches, and of the LDSV-30 15 feet 2 inches.

## New Type Sand or Stone Spreader

A new type of separate spreading unit for covering oiled and waterbound surfaces or icy pavements with sand or stone, has been brought out by the Goroco Mechanical Spreader Co., Upper Darby Post Office, Philadelphia, Pa.

Retaining the principle of centrifugal spread, the machine is furnished with an 8½-foot-wide hopper, designed to accommodate the full tailgate opening on the propelling truck, eliminating the need for alteration to the truck tailgate as required for previous models of Goroco spreaders.

The quantity spread per square yard is regulated by a multiple slide gate opening in the hopper, controlled by a lever within easy reach of the operator. This opening is always self-centered over the spreading disk, assuring uniform distribution of sand or stone in quantities ranging up to 50 pounds per square yard. The width of spread is governed by the speed of the truck.

Of further interest is the enclosed gear transmission, oil filled, assuring complete lubrication to all working parts. The machine operates on two wheels, steel or rubber-tired, as desired. Sturdy construction throughout offers a long-lasting piece of equipment that will withstand the hard use to be expected in maintenance and construction service.

The new design retains the advantages of earlier models in that it is a separate spreading unit, attachable to any make of truck, spreads any loose aggregate from dust to 1¾-inch sizes, requires but two men for operation and has a capacity of 400 tons per day.

When used backing over icy roads or oiled surfaces, 50 per cent of the cover material is spread ahead of the spreader wheels and 100 per cent ahead of the truck wheels, thus preventing skidding, picking up or tracking.

## New Representatives for Pomona

Harry P. Hart, who has been associated with the turbine pump business for several years, has been assigned as direct factory representative to the Pacific Northwest territory for the Pomona Pump Co., of Pomona, Calif. He will make his permanent headquarters at 1915 31st Avenue, South, Seattle, Wash.

R. L. Nourse, who has served one of the Pacific coast pump companies for the past ten years, has recently been appointed direct factory representative of the Pomona Pump Co. for the Chicago District, assisting C. C. Cook.

These appointments are in conformity with a broad expansion program of the Pomona Pump Co. for 1931. During 1930 this company's manufacturing capacity was more than doubled by the construction of several additional modern factory buildings.

THE NEW GOROCO SAND AND STONE SPREADER

*WHAT IS THE*

# A·T·&·T·?

ALL that most people see of the telephone company are a telephone and a few feet of wire.

But through that telephone you can talk with any one of millions of people, all linked together by the web of equipment of the Bell System.

All its efforts are turned constantly to one job —to give better telephone service to an ever-increasing number of people, as cheaply as it possibly can.

The American Telephone and Telegraph Company provides the staff work for the Bell System. To it the operation of the telephone service is a public trust. It pays a reasonable dividend to its stockholders . . . and uses all earnings beyond that to improve and extend the service.

There are more than five hundred and fifty thousand stockholders, and no one person owns so much as one per cent of its stock.

The Bell System operates through 24 regional companies, each one attuned to the needs of its particular territory. In addition, the 5000 members of the Bell Laboratories staff do the scientific work which makes it possible to improve and widen the service at least cost to its users. The Western Electric Company, which manufactures for the Bell System, specializes in the economical production of telephone equipment of the highest quality.

All these facilities are directly available throughout the entire Bell System, at any time or place. . . . Because of them, every dollar that you spend for telephone service brings you constantly greater value and convenience.

★ *AMERICAN TELEPHONE AND TELEGRAPH COMPANY* ★

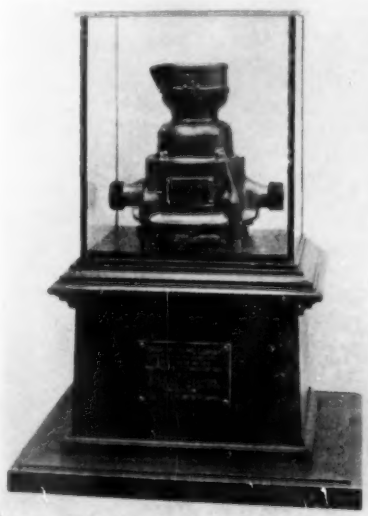
Why not remember to mention THE AMERICAN CITY?

## 1,000,000th Meter Presented to President of Company

A water meter destined to be plated with gold and mounted under glass on a walnut pedestal was authorized for assembly by the meter register in June, 1930, at the plant of the Badger Meter Manufacturing Co., Milwaukee, Wis.

It was Badger meter No. 1,000,000. Everyone in the organization, except President C. W. Wright, knew what was to be done with that particular meter. In accordance with the plan, the meter was assembled and tested. It was then gold-plated to preserve its color and to give it special dignity. The glass cover and pedestal were built and two inscription plates prepared, one for the meter and one for the pedestal.

In December the meter was presented to the President and with it went the compliments and good wishes of his entire organization. A written message to Mr. Wright, carrying the signatures of men from every department, stressing the



THE 1,000,000TH BADGER METER

respect of the organization for its President and crediting him with the leadership and inspiration which had made possible the company's progress, was part of the presentation. The cost of this historic meter was prorated among the entire organization so that everyone might have a part in presenting it to Mr. Wright.

This millionth meter was manufactured during the silver anniversary year of the company, Vice-President Luke L. Ballard told of the company's humble beginning in 1905 and of its slow but steady growth during the 15 years which followed. A single order for 5,000 meters in 1919 served as an important stimulus. As time went on, a new, modern plant was erected in Milwaukee, and branch houses were established in New York, Cincinnati, Savannah, Kansas City, Los Angeles, Waco and Seattle, and Badger meters are sold in every civilized country in the world.

As the company grew, its line of cold-water meters was enlarged. Badger meters of the disc type are made in sizes from 5/8-inch to 6-inch; Badger turbine meters from 2- to 12-inch sizes; and the Badger compound meter from 2 to 10 inches. In addition to the cold-water line, great progress has been made with meters for the gasoline industry and other industrial uses.

The millionth meter will remain in Mr. Wright's office. To him it represents more than a milestone in the progress of his company, for back of it are the good wishes and respect of his organization.

W & T TYPE MSP CHLORINATOR FOR SMALL WATER WORKS

## Chlorinators for Small Water Works and Sewage Treatment Plants

The chlorination of small water supplies is never less important than similar precaution in large supplies. Wallace & Tiernan Co., Inc., Newark, N. J., have developed their Type MSP chlorinator to do this work as accurately and dependably as the equipment used on large supplies.

Not only does the machine accurately control the small amount of chlorine necessary, but its simple construction is readily understood by the practical water-works man. All control parts are on the outside, and a removable hood makes possible complete inspection at any time.

Reliefs are provided to prevent moisture from being drawn back into the chlorine gas control parts, and also to prevent escape of gas into the room in the event of accidental failure of the auxiliary water supply operating the equipment. The machine is also adapted to the small sewage disposal plant. The equipment can be erected at any convenient point in the plant with a minimum of labor, since no preliminary foundation or mountings are required. It is finished in Duco gray and its appearance conforms to that of modern water-works equipment.

## Embry to Represent Kennedy in Detroit and the Lower Peninsula

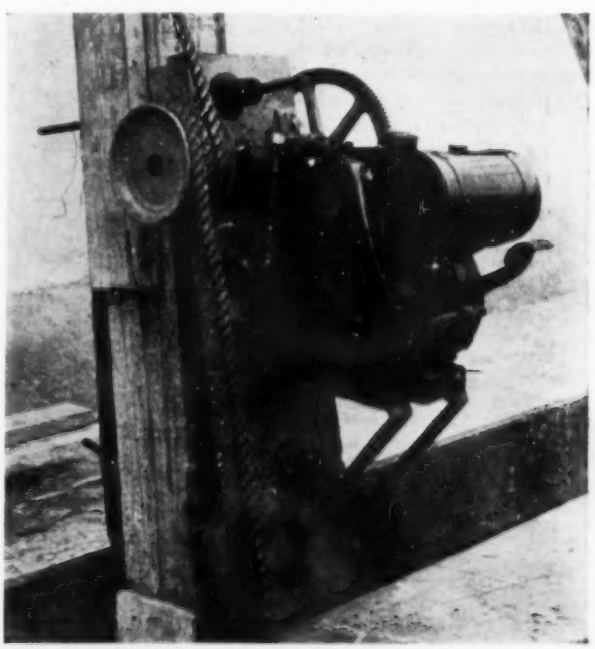
The Kennedy Valve Manufacturing Co., Elmira, N. Y., has announced the appointment of Harvey Embry as its representative in Detroit and the lower Michigan Peninsula. He will handle Kennedy globe, angle and check valves for power plants, water supply, industrial, plumbing and heating, fire protection and other services, malleable iron and brass screwed pipe fittings, cast iron flanged fittings, flanges and fire hydrants.

## A Small, Easily Operated Power Hoist

The Wyman powered portable hoist designed by Robert Wyman, Billerica, Mass., is powered with a 1-horsepower Briggs & Stratton gasoline engine, and weighs only 175 pounds. This hoist operates over a direct-connected niggerhead with a lifting capacity of 500 pounds on a single line at a speed of 72 feet per minute.

This powered portable hoist is an inexpensive hoisting apparatus designed to meet the need of a powered unit where a larger unit would be uneconomical. It is particularly adaptable for the use of builders, water works and other municipal departments, public utilities and contractors. The mobility of the machine and the simplicity of its installation make it possible to shift it from one job to another and back and forth between jobs, giving the owner the greatest possible saving. It has no clutch, and no high-priced attendant is necessary for its operation.

The exclusive sales rights for the Wyman portable hoist are controlled by Interstate Equipment Corporation, 331-333 South Street, Newark, N. J., and distribution will be made through dealers in all parts of the country.



THE WYMAN POWERED PORTABLE HOIST

*Court Street, Niagara Square to Terrace, Buffalo, N. Y., paved with Native-Lake Asphalt in 1899. Total maintenance cost over 31-year period, less than ½ cent per square yard*

# Maintenance cost less than ½c per sq. yd. for 31 years

Such a record of long service and economy demonstrates the value of Trinidad Lake Asphalt as a street paving material.

There are millions of square yards of Trinidad Lake Asphalt pavements which have successfully withstood the ravages of traffic for more than twenty-five years.

City engineers and public officials who are interested in getting smooth, resilient, dustless and above all enduring pavements for new construction or as a resurfacing over old brick, concrete or stone block, can get a pavement meeting these requirements by specifying Trinidad Lake Asphalt.

We also supply Bermudez Road Asphalt for road building. Interesting data and other particulars furnished on request.

**THE BARBER ASPHALT COMPANY**

New York PHILADELPHIA Chicago
St. Louis Kansas City San Francisco

**TRINIDAD NATIVE LAKE ASPHALT**

# FAST

HUBER 10-TON ROAD ROLLER OWNED BY CITY OF SANDUSKY, OHIO

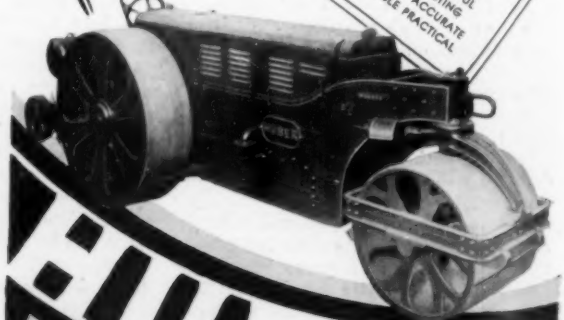
**NO LOST TIME WITH A HUBER**

Huber is just naturally a fast worker. All gears always in mesh . . . single lever control . . . and instantaneous reverse without shifting gears are the basic features that facilitate quick action. Huber Rollers are pushing both little and big jobs through to completion in new short time records. You owe it to yourself to see a Huber at work before you buy. Built from 5 to 14 tons.

Write for new Huber Catalog.

**THE HUBER MFG. CO.**
300 E. Center St.
MARION,
OHIO

HUBER
HUBER 12 POINT PERFORMANCE
RUGGED SAFE
FAST SMOOTH
POWERFUL FAITHFUL
BALANCED LASTING
FLEXIBLE ACCURATE
PROFITABLE PRACTICAL



**HUBER MOTOR ROLLERS**

### Permutit Acquires New Units

Announcement has been made by Spencer Robertson, President of the General Water Treatment Corporation, that the organization of that company has been effected by the exchange of the capital stock of the Permutit Co., New York, for stock of General Water Treatment Corporation, and also the acquisition of the capital stock of Ward-Love Pump Corporation.

The General Water Treatment Corporation, through its subsidiaries, will engage in the manufacture and sale of water systems and equipment and minerals for the softening, purification or other treatment of water.

### Air Transport Engineers Reorganize

It has been announced that on January 1, Black and Bigelow, Inc., 551 Fifth Avenue, New York, changed its name to A. A. Bigelow & Co., Inc., with no change in policy or personnel other than that Archibald Black has resigned as President of the corporation but will remain as Consulting Engineer, and A. A. Bigelow, formerly Vice-President, has been elected President.

This firm took over the consulting engineering work of Mr. Black nearly three years ago and has therefore an unbroken record of service since 1920, making it perhaps the oldest firm of this character in the country.

### Johnson Takes Over Rawls Motor Scythe

The Johnson Motor Co., Waukegan, Ill., has announced that it has taken over the licenses and patents for the manufacture and selling of the motor scythe of the Rawls Manufacturing Co., Streator, Ill. The Johnson company engineers have made a number of improvements in the mower, which will be known as the Johnson motor scythe, and which was described in detail on page 193 of the September, 1930, issue of THE AMERICAN CITY.

THE JOHNSON MOTOR SCYTHE

The frame, formerly made of tube and angle iron, has been replaced by flat stock of cantilever construction, making it sturdier and less subject to vibration. Vibration has been further reduced by replacing the welded handle bars with bars trunnioned at the axis of the wheel. For the guiding and carrying support, two spring yokes have been fastened to the frame.

The gas tank of ⅛-inch sheet steel is welded to the frame, and a drain plug has been provided for emptying gas or any condensation in the bottom of the tank. The ½-horsepower, 2-cycle type motor has been equipped with a new type of starter which throws the motor into operation with a pull of the handle. The starter is contained in a completely enclosed starter housing, and an exhaust muffler has been attached to the motor.

### Elgin Selling Colecto Garbage and Ash Trucks

The Elgin Corporation, 501 Fifth Avenue, New York, has announced that it has now added Colecto ash and garbage trucks to its line of automotive machines for sanitary street and catch-basin cleaning. The Colecto truck provides a sealed unit for moving foul-smelling, disease-producing refuse through the streets without littering them, putting an end to unsanitary, faulty, old-time methods, inasmuch as it provides waist-high loading, averts injurious high lifts, the spilling of refuse, and delays for cleaning up spilled refuse, and prevents dust, litter and papers from blowing about during collection.

### Seth-Thomas and Western Clock Company Combine

The Seth-Thomas Clock Co., and the Western Clock Co., both of Thomaston, Conn., have combined under a controlling company known as the General Time Instrument Corporation. The executive offices of the Seth-Thomas Clock Co. have been moved to Thomaston, Conn., but the Tower Clock Department is still located at 25 West 44th Street, New York.

### A New Type of Gage for Testing Aggregates

With modern methods and under actual job conditions the strength of concrete is largely determined by the amount of mixing water used per sack of cement. As mixes are always based on dry aggregates and all have a certain percentage of moisture, it is necessary to determine the exact amount of water to use, and so the moisture of contents of the aggregate must be ascertained and accounted for. An Aggregate Auto Gage has recently been announced by Toledo Precision Devices, Inc., a subsidiary of Toledo Scale Co., Toledo, Ohio.

With this scale, having once determined the moisture contents of the regular run of each aggregate, one can automatically and correctly weigh out the specified amounts of the various aggregates, compensating for the surface moistures in each. Cement and water can be added by weight in the right proportions if desired.

THE TOLEDO AGGREGATE AUTO GAGE

The Toledo aggregate auto gage will determine the specific gravity of concrete aggregate, it will determine the per cent of moisture of concrete aggregate, and compensate for the surface moisture of concrete aggregate. It will also show the exact weight of dry aggregate, the weight of regular run aggregate, and the actual weight of surface moisture. It will make a sieve analysis, will show the moisture within the aggregates themselves, and do regular weighing.

### Clouser Joins Hardinge Staff

Hardinge Company, Inc., York, Pa., manufacturers of sanitation equipment, as drying and clarifying equipment, and Ruggles-Cole sludge dryers, have announced that L. H. Clouser, formerly instructor of Sanitary Engineering at Penn State College, State College, Pa., is now with the Sanitation Department.

### Water-Works Industry Loses a Pioneer

With the recent death of Horace Wesley Clark, the water-works industry has lost one of its leading pioneers. As early as 1893, Mr. Clark conceived the idea of a frost-proof meter box to protect the water meter at the curb from weather and tampering. This idea led to the invention of the Clark meter box which was patented in 1902. In 1912 the H. W. Clark Co., Mattoon, Ill., was incorporated to manufacture the Clark meter box. In October, 1913, they moved into their new factory in that city. Mr. Clark remained continuously at the head of the company from the time of its organization until his death.

He was one of the oldest members of the American Water Works Association, having joined in 1895. His loss will be keenly felt by a large circle of friends and admirers.

# Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

# Street-Lighting and Floodlighting Progress in Buffalo

*By* JOHN WINTERS FLEMING

IN 1929 the Committee in charge of Buffalo's celebration of Light's Golden Jubilee—the fiftieth anniversary of the invention of the electric incandescent lamp by Thomas Alva Edison—presented the city with a battery of floodlight projectors to illuminate McKinley Monument. In 1930 the Main Street Association presented the city with 124 new street-lighting standards to bring to a high level the lighting of Buffalo's chief retail thoroughfare, Main Street. In 1931, as a sequel to these events, which have made Buffalo keenly light-conscious, there is being formulated a city-wide program for the floodlighting of public buildings.

Chronologically the story properly starts thirty years ago, in 1901, when William McKinley, President of the United States, was shot by an assassin while attending a concert in the Temple of Music at the Pan-American Exposition, and died in Buffalo a few days later.

## Floodlighting the McKinley Monument

Twenty-eight years ago, as the result of a popular subscription, a pure white marble shaft ninety feet tall was erected in Niagara Square to the memory of the martyred President. Two years ago the Golden Jubilee Committee gave to the city twenty 1,000-watt projectors to flood the shrine with light.

McKinley Monument now stands in the middle point of the Niagara Square Civic Center, on one side of which the new 32-story $8,000,000 City Hall is nearing completion. The base of the monument is guarded by sculptured lions and surrounded by four balustrades, one on each side. Cleverly concealed in each balustrade is a single tier of five 1,000-watt floodlight projectors. The total of 20,000 watts, producing clear white light to illumine the marble shaft, is automatically switched on at sunset and switched off at one o'clock in the morning, every night of the year, by a self-adjusting seasonal time clock.

## New Lighting for Main Street

In October, 1930, the Main Street Association made front-page news with the announcement of its gift of 124 new street-lighting standards, costing $35,000, to place Buffalo in the front ranks of cities with well-lighted business streets. In presenting this handsome gift the Association said:

"We are doing this to keep Buffalo's Main Street up to lighting pace and to impress upon visitors to the city—as well as upon the city's own citizenry—the fact that Buffalo is one of the world's leading electrical cities—a metropolitan municipality nearest the hydro-electric center of the world, Niagara Falls."

On Monday, December 15, 1930, with the blare of bands, the buzz of fire-streaming airplanes far overhead, speech-making and broadcasting, the bursting of bombs and a turnout of thousands in near-zero weather, Main Street's new lighting was switched on. For 6,160 feet along Main Street—twelve city blocks—from Exchange Street north to Goodell Street, the 124 new standards, each carrying three 6.6-ampere luminous-arc lamps spread in the same plane in a flat circle 120 degrees apart from each other, transformed the thoroughfare.

LOOKING NORTH ON MAIN STREET, BUFFALO, N. Y., UNDER OLD LIGHTING

THE NEW LIGHTING WITH THREE-ARC STANDARDS

Commenting on this new white-way street lighting, the man who illuminated Niagara Falls, W. D'Arcy Ryan, Director of the Illuminating Engineering Laboratory of the General Electric Co., said:

"It is the most distinctive and best-lighted arc system in the country. The Main Street illumination will be 50 per cent greater than the famous 'Path of Gold,' Market Street, San Francisco, which has long stood out as one of America's best-lighted streets."

## More Light from Fewer Poles

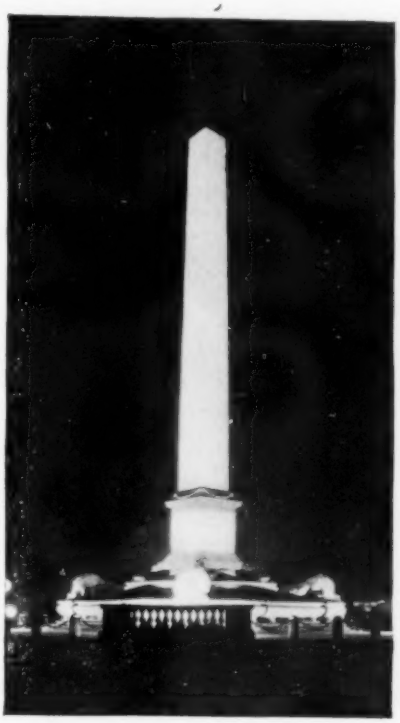
The new ornamental steel heavy-duty standards, made by the Union Metal Manufacturing Co., are spaced from 90 to 100 feet apart, averaging 96 feet, and measure 23 feet 4 inches from street level to light center, 8 feet 10 inches taller than the old ones. They yield 50,100 lumens per pole as against 16,700 lumens per pole from the old standards. They carry three G.E. arc lamps, instead of one. And, last but not least, the new standards also carry all trolley span wires and all police traffic and signal box wires —thus allowing the transportation company to remove 102 trolley span-wire poles.

Before finally deciding on arcs, as against incandescent lamps, the Main Street Association surveyed the white-way lighting layouts of ten other American cities and then planned this unique layout. Buffalo is said to be the third city in the country—San Francisco and Salt Lake City being the others—to use three-arc standards and the first city anywhere to use these three arcs in the same flat circle plane.

The lamps were furnished by the Buffalo General Electric Co., which also installed the system, featured by underground wiring throughout. The city pays the company $75 per lamp per annum, a total annual cost of $27,900, which is $17,064 more than the cost of the old lighting.

Buffalo's present city-wide lighting layout embraces more than 21,000 units of various types—there being at least one street lamp for every 144 linear feet of paved streets and parkways.

Just two days before the new Main Street lights were switched on, City Councilman Frank E. Freedman, speaking in City Council meeting on Saturday, December 13, outlined plans whereby public buildings and outstanding monuments in Buffalo are to be floodlighted. He echoed the sentiments expressed by the Main Street Association when he said that the floodlighting of public buildings and monuments not only adds luster to their beauty but also symbolizes Buffalo's proximity to the world's greatest hydro-electric development.



McKINLEY MONUMENT

## Floodlighting Public Buildings

Councilman Freedman's plans call for the floodlighting of the Museum of the Buffalo Historical Society, of the Albright Art Gallery, of the Museum of Natural Science—three institutions whose fame is world-wide—and of the Soldiers' and Sailors' Monument in Lafayette Square in the center of downtown retail Buffalo.

This municipal floodlighting project will culminate in one splendidly glowing climax in 1932 during Buffalo's Centennial celebration. At that time the Court Street approach to the Niagara Square Civic Center will be ornamentally illuminated, as Main Street now is, and the new 32-story, $8,000,000 City Hall will be finished—and floodlighted.

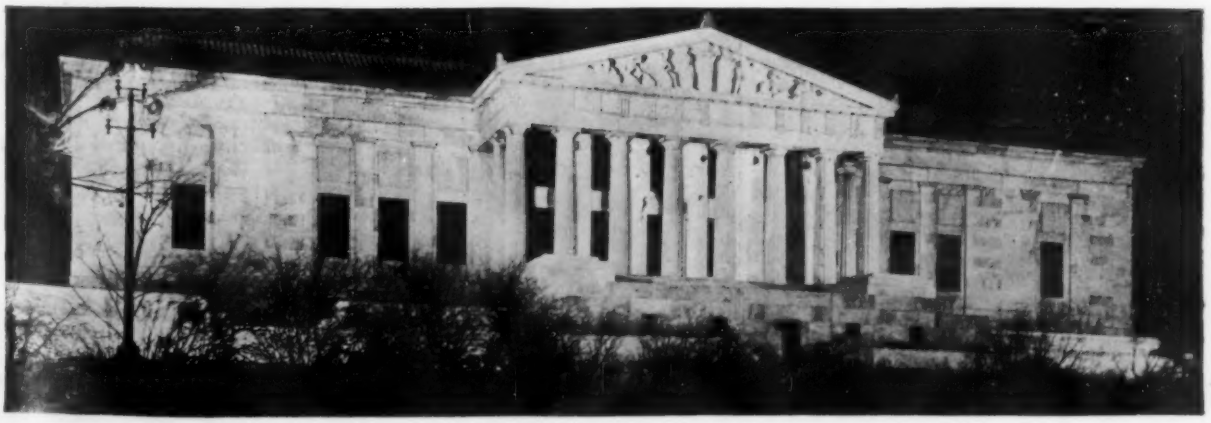
## The Historical Museum

But the Museum of the Buffalo Historical Society is already well in advance of these plans. On the last day of 1930, at six o'clock in the evening, against the black mantle of a winter night, the Historical Building leaped into light. This structure is one of three left standing from the Pan-American Exposition—the other two are the Albright Art Gallery and the Delaware Park Lake Casino—and it occupies the most favorable site of the three, high on a bluff overlooking Delaware Park Lake. It is a pure white marble replica of a Grecian temple and is the work of a noted Buffalo architect, George Cary.

The building's front measures 175 feet across. Six feet in from each end of the front—thus spaced 163 feet on center from each other—are two ornamental steel towers 22 feet tall and equipped with specially constructed brackets that carry five 1,000-watt floodlight projectors (Pittsburgh Permaflectors) fitted with clear lamps. These ten projectors are arranged at such angles that all of the 10,000 watts of floodlighting is concentrated on the steps, columns, entablature and pediment, that comprise the south entrance to the structure, 90 feet from the floodlights.

This concentration of the floodlighting was done to emphasize and to bring into bold relief the nine sculptured figures in the pediment design—allegorical figures that represent the nine prime factors of civilization: art, science, war, religion, philosophy, husbandry, law, industry, and history. These representations are the work of Edmond Amateis, New York City sculptor.

Nineteen feet horizontally in from the end of the building's northwest corner and 65 feet from the building itself stands another 22-foot ornamental steel standard. This tower carries two 1,000-watt floodlight projectors, which illuminate the north side of the Museum.



MUSEUM OF THE BUFFALO HISTORICAL SOCIETY UNDER ITS NEW FLOODLIGHTING

# Improving the Lighting of a Resort City

LONG BEACH, N. Y., the popular summer-resort city on the south shore of Long Island, 25 miles by railroad from the heart of New York City, has the usual street-lighting problems of cities of its size, and some additional ones. Besides the business and residence sections there is the wide concrete Boardwalk along the ocean, lined with stores, amusements, bathhouses, hotels and restaurants, popular night and day. It also has the problem of a widely varying population, ranging from about 6,000 in winter to 30,000 in summer, with great crowds of visitors on midsummer evenings, week-ends and holidays.

Street lighting in Long Beach has in the past been of modest if not meager proportions, and this is still true of the residential districts, where the prevailing lighting is 60-candlepower (600-lumen) lamps enclosed in round inside-frosted globes placed on 11-foot concrete posts which the city itself made. These make rather neat, inconspicuous and not unattractive standards, but the illumination can hardly be called adequate. The newly adopted street-lighting code of the Illuminating Engineering Society recommends a minimum of 2,500-lumen lamps, 150 feet apart and 18 feet high, although mentioning as permissible the use of 1,000-lumen lamps, 15 feet high, at a minimum spacing of 125 feet.

## Better Business Lighting

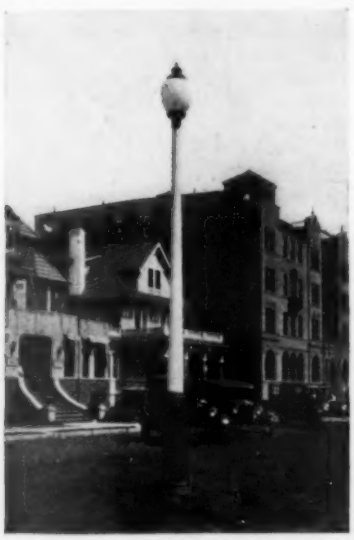
Park Street, the main business thoroughfare, upon which face the railroad station, the City Hall and the chief shopping section, was formerly provided with somewhat similar concrete posts (although a little higher), carrying 4,000-lumen lamps. The outer ends of this street are still lighted in this way, but in June, 1930, a notable improvement in the lighting was effected in the business portion by installing twin-light standards carrying 10,000-lumen lamps 18 feet 4 inches above the ground. These standards being opposite each other at the sides of the street, there is a total of 267 lumens per linear foot of street as compared with 32 lumens per linear foot for the outer portions of Park Street.

Two of the other streets in the city had been previously equipped with improved lighting, using slender steel standards, each carrying 10,000-lumen lamps, 15½ feet above ground. These streets are Broadway, which parallels the Boardwalk, and Long Beach Boulevard, which leads across the bridge to Long Island proper. Both of these have center parkways in which the posts were placed. The Boardwalk has similar illumination, the posts being built in with the railing.

There had been some discussion of reducing the lighting intensity in the central section of Park Street after the close of the summer season, but this has been decided against. Similarly, the lamps on the Boardwalk remain at the same intensity winter and summer, no change being made in the winter, partly because the lighting is none too adequate. There is a considerable number of transient visitors in winter, and the city wishes to retain the advertising value of the Boardwalk illumination.

## Other New Installations

Progress in improving the street lighting in Long Beach is being furthered this year by a new installation on Beech Street, a secondary business street and a considerable thoroughfare, although rather narrow. This installation consists of twin lamp-posts somewhat similar to those on Park Street, but slightly lower and carrying 6,000-lumen lamps. In the near future the illumination on Broadway will be doubled by the installation of twin heads on the existing standards, and it is to be expected that the street-lighting system of the city will make continual progress. The Queens Borough Gas & Electric Co., which purchased the municipal electric system a few years ago, is cooperating closely with the city in order to bring about desirable improvements as soon as the city feels they are necessary and, with its rather small permanent population, is able to meet the added cost. The present administration, headed by Mayor Frank Frankel, is interested in giving Long Beach the best lighting that conditions will permit.



NEW AND OLD LIGHTING STANDARDS AT LONG BEACH, N. Y.

Upper left, one of the new 20,000-lumen units on Park Street; the City Hall is in the background. Upper right, one of the home-made concrete standards, with single 4,000-lumen lamps, still in use on the remaining portions of Park Street. Lower left, home-made concrete post on residence street, with 600-lumen lamp in round globe. Lower right, steel standard with 10,000-lumen lamp, in center strip of Broadway

TYPES OF LIGHTING, LONG BEACH

| | Park Street | | Beech Street | Broadway, etc. | Side Streets |
|---|---|---|---|---|---|
| | Business | Outlying | | | |
| Lumens per— | | | | | |
| Lamp..... | 10,000 | 4,000 | 6,000 | 10,000 | 600 |
| Post..... | 20,000 | 4,000 | 12,000 | 10,000 | 600 |
| Amperes ..... | 20 | 6.6 | 20 | 20 | 6.6 |
| Mounting height | 18'4" | 12'4" | 16'8" | 15'6" | 11' |
| Spacing | 150' Op. | 120' S. | 150' S. | 170' *S. | 170' S. |
| No. posts ..... | 50 | 104 | 28 | 133* | 675 |

Op., opposite; S., staggered or single.

* Boardwalk has 65 posts spaced about 160 feet apart; Long Beach Boulevard has 16 posts.

# Gift Makes Night Sports Possible

JOHNSTOWN, N. Y., is now provided with a modern athletic field that offers many kinds of recreation, including night football played with the aid of nearly 5,000,000 candlepower of electric lighting. All of these facilities, with the exception of the land, were the donation of Mrs. Rose M. Knox, who has made various other gifts to her home city.

Two years ago Mrs. Knox attempted to purchase a tract of twenty acres of undeveloped land at the outskirts of Johnstown with the purpose of creating there a public athletic field, which would be turned over to the municipality. She found, however, that that very tract had shortly before been acquired by the city itself with the expectation of using it for a new high school in part, the remainder to be developed for recreational purposes. Thereupon, Mrs. Knox persuaded the city to deed the tract to her for two years under the agreement that she would equip it as a modern athletic field and return it to the city. Upon obtaining possession, she proceeded to carry on an extensive program of improvement, including grading and fencing, the construction of an attractive gateway, and the building of concrete bleachers on a sloping bank beside a football gridiron around which passes a quarter-mile cinder track. The area was also provided with a baseball diamond, six tennis courts, a runway for roller skating, facilities for ice-skating in winter, sand piles, wading pools and various playground devices for children and also a band-stand and a club-house.

DAY AND NIGHT VIEWS OF KNOX FIELD, JOHNSTOWN, N. Y.

An unusual and spectacular feature of the field consists of the lighting arrangement for night football. This was installed by engineers of the General Electric Co. and consists of four groups of 15 1,000-watt floodlight projectors mounted on fabricated steel poles, two of which are 90 feet high; the others, which stand on higher ground, are 60 feet high.

The returning of the field to the city's ownership was made an occasion of a large public celebration. Mayor Harry A. Jenner proclaimed a half-holiday, and some 9,000 people from Johnstown and the surrounding territory gathered at the field, several local organizations formed a parade, speeches were made expressing the community's appreciation, and games were played on the field, participated in by large numbers of school children. That night the high-school teams of Johnstown and St. Johnsville played a fast game of football, attended by 4,000 spectators.

# Public Service Commission to Advise on Street-Lighting Rates

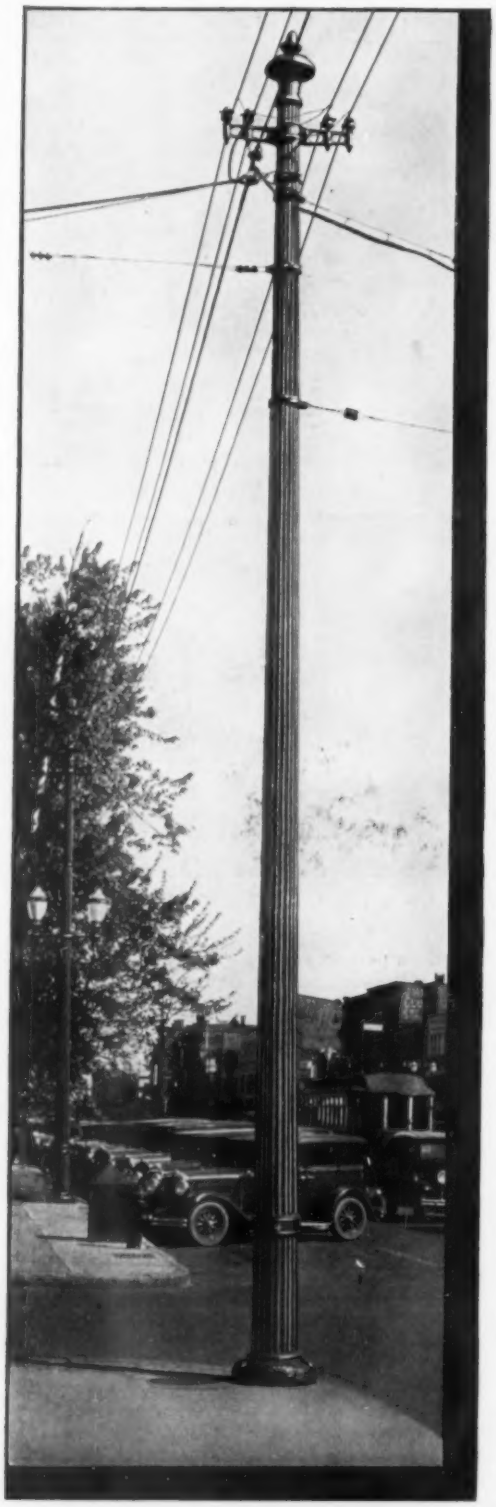
MUNICIPALITIES of 5,000 or more people, in New York State, are paying annually to public utility companies about $8,500,000 to light their streets.

For many years these municipalities have been greatly handicapped in opposing street-lighting rates or increases in such rates because of existing state laws which give to certain utility companies practically a monopoly in this field. Most cities and first-class villages contract with utility companies for the lighting of their streets by electricity. The larger cities have to comply with a provision of the state law which limits the awarding of a contract for street lighting to those companies that have been granted franchises. In these cities, other than New York, the cost of street lighting amounted to $1,600,000 in 1928.

Contracts for street lighting are renewed or changed every three to five years. When renewals or new proposals are being considered by the municipal legislative bodies, none, except the very large cities, have any way of determining accurately whether the proposed rates are just and equitable, except by employing experts, which is costly and seldom resorted to. After the contract has been made, the city administrations, excepting in the largest cities, have no one in their employ who is technically fitted to determine whether or not the municipality is obtaining the service that it is paying for.

To remedy this condition, W. P. Capes, in behalf of the New York State Conference of Mayors and Other Municipal Officials, of which he is Secretary, petitioned Governor Franklin D. Roosevelt to empower the State Public Service Commission to assist the municipalities of the state in obtaining equitable street-lighting rates and proper service. Mr. Capes suggested that the Public Service Commission be given authority and power to delegate its experts to assist the cities in such cases. In response to this petition Governor Roosevelt replied that the Public Service Commission should assist municipalities and consumers in securing equitable rates and efficient service. Where a municipality and a public-utility company cannot agree on the rates for the lighting of streets, the Governor says the Public Service Commission is given authority to fix such rates. It is also planned to have the Public Service Commission experts assist the cities and villages in all such rate cases. The cities are thus assured of expert service and advice at very little expense, in determining proper rates and service for the lighting of their streets.

E. D. GREENMAN.



# DEVELOPING A WORKABLE PROGRAM FOR IMPROVED PUBLIC RELATIONS

Speaking of the fall elections and their effect on the public utilities, the Electrical World says: "Part of its (the light and power industry) task is to conduct its affairs so that it will win public approbation and not public condemnation. Utility management has failed to measure up to this responsibility even though management sins were more those of omission than those of commission and were natural and understandable. *The industry should marshal its leadership immediately for developing a positive and workable program for improved public relations.*"

Every program for promoting better public relations should take into consideration the matter of pole lines. Very often pole lines arouse public disapproval. A demand arises for underground construction. But it is not wires people object to so much as unsightly poles.

Union Metal offers you a way to build good will, a way of demonstrating your interest in the public through more attractive pole lines. Fluted Steel Poles are essentially attractive. They dress up the streets. And because this one type of pole may be used for distribution lines, trolley span wires, street and traffic lights, fewer poles are necessary.

An installation of Union Metal Fluted Steel Poles has the whole hearted support of city officials, property owners and citizens in general.

Such installations are an important part of what Electrical World has termed "a positive and workable program for improved public relations".

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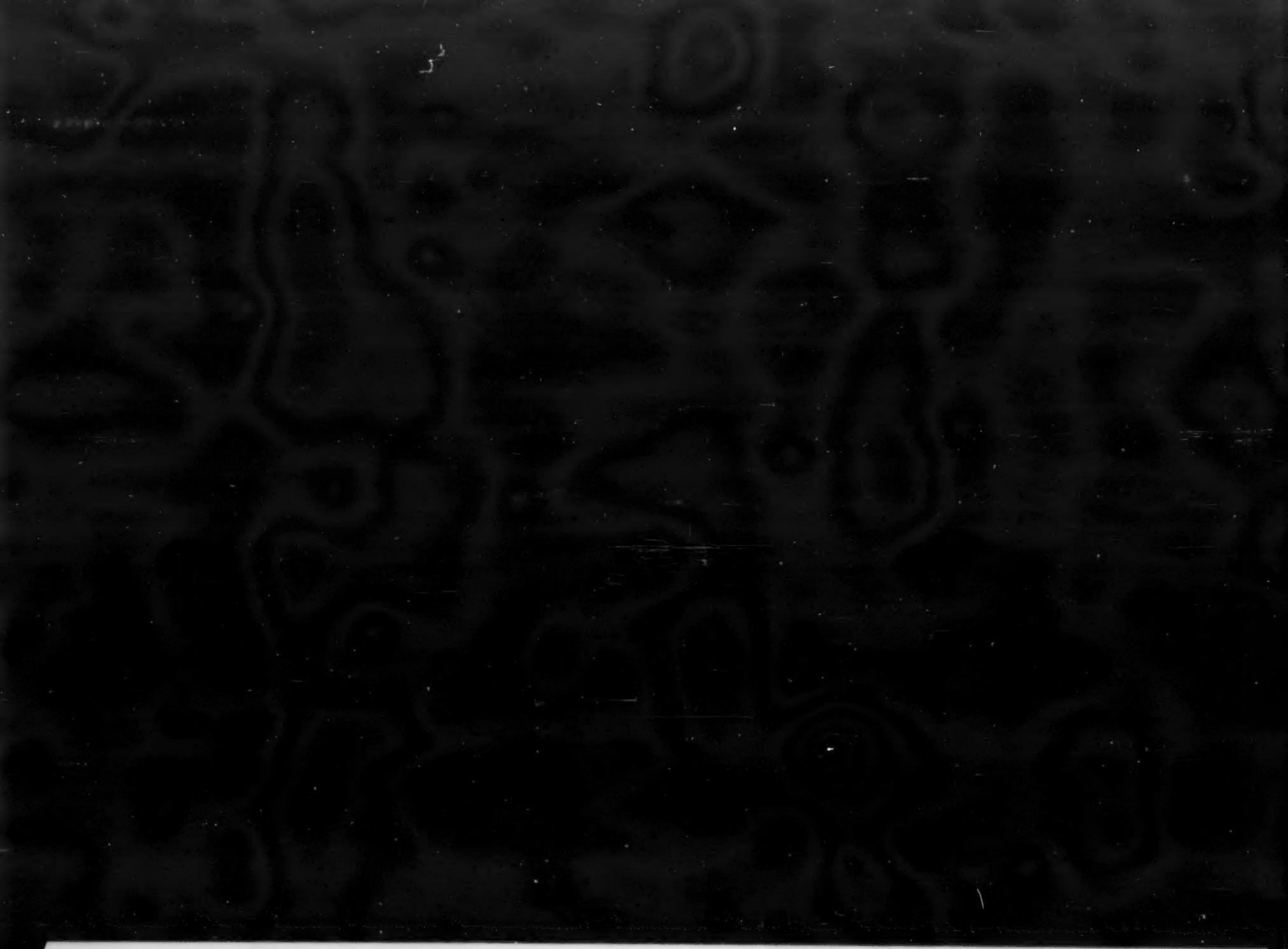
# UNION METAL DISTRIBUTION POLES



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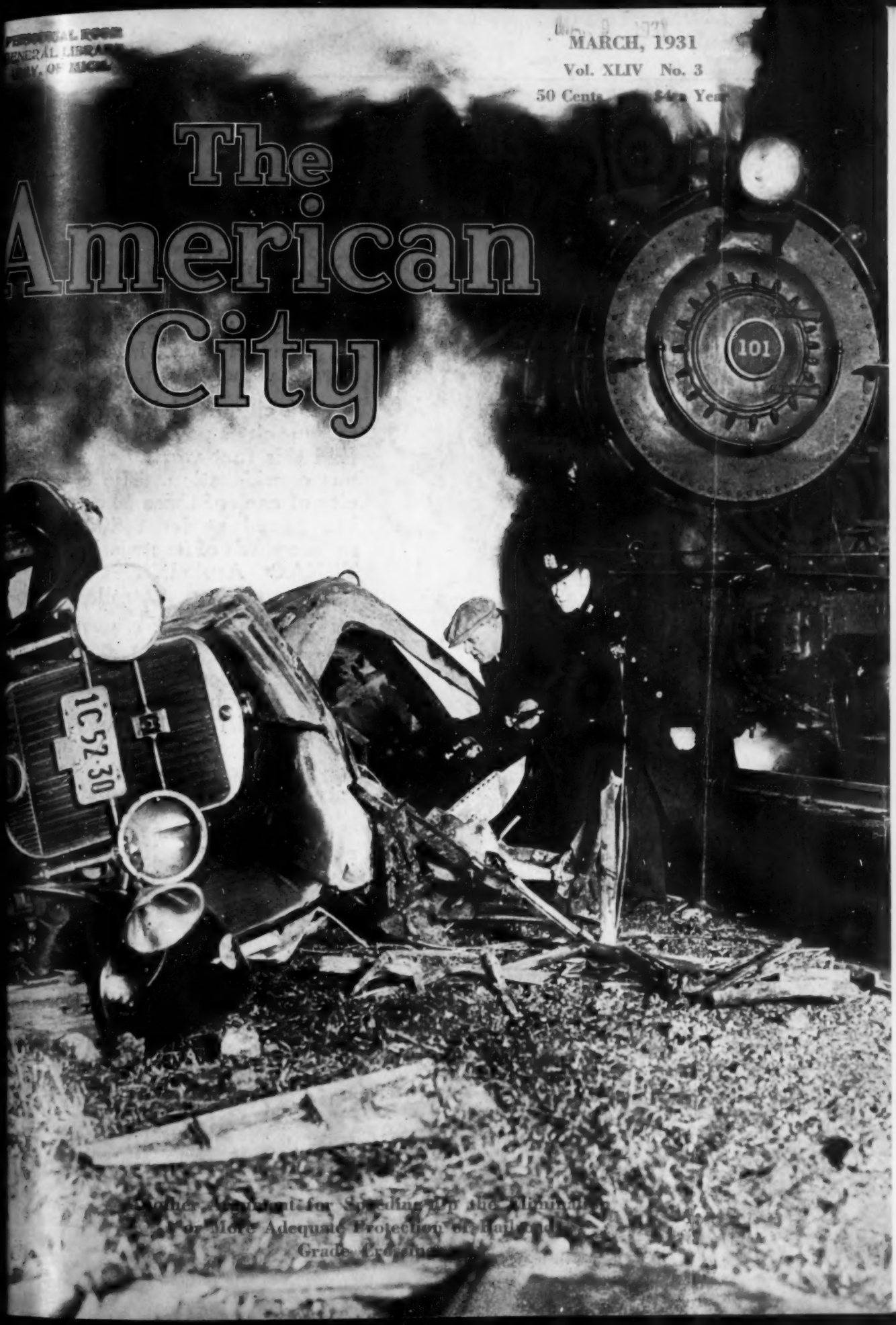
# The American City

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